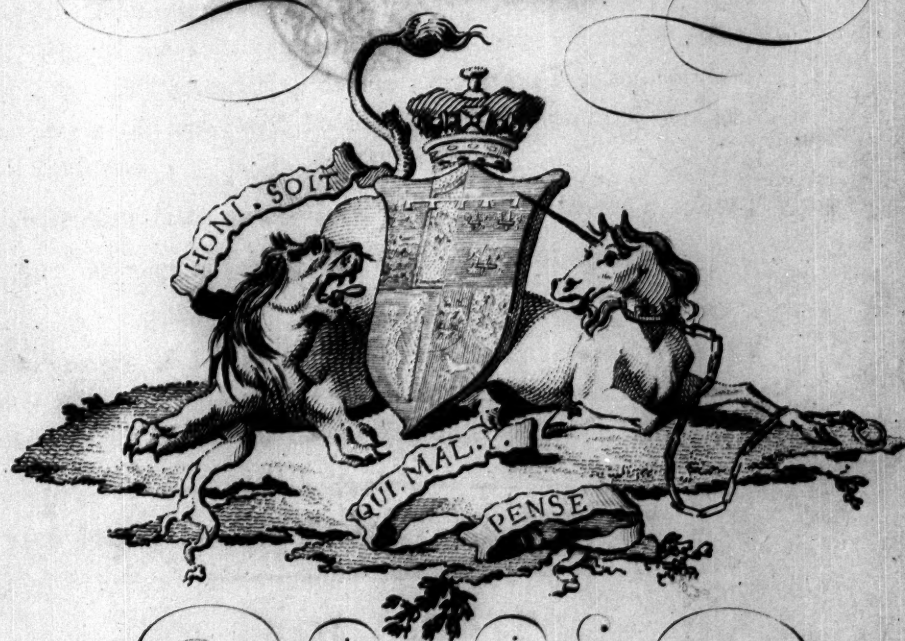


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BY THE REV. DR. JOHN TRUSLER.

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THE
HABITABLE WORLD
DESCRIBED.

OF THE SEVERAL STATES OF THE EMPIRE, AND OF THE
OF THE GULF, FROM NORTHERN TO SOUTHERN.

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TRAVELS
THROUGH
Siberia and Tartary,
PROVINCES OF THE RUSSIAN EMPIRE.

By S. PALLAS, M.D.

PROFESSOR OF NATURAL HISTORY, &c.

PART I. CONTINUED.

IN my way from Kalmykowa, on the 19th of *August*, 1769, to the next station on the line, I met with a number of tarantulas, which every Cossack was acquainted with, and one and all declared, that their bite was harmless. Not many miles distant, on a tract of the high shore of the river Jaik, before we reached the heights of the Inderskoian mountains, which extend themselves to the river, we saw, almost every

where, large flocks of antelopes feeding, which, as the wind was in our faces, did not fly before us, the sight of this animal being imperfect, or rendered obscure, by four spongy excrescencies on the eye; nature, however, has favoured them in the organs of smell, and made them much superior to other animals in it's quickness and extent, for they will scent a man or animal, if the wind is favourable, at two or three miles distance. Yet it is wonderful that the antelopes, which seem to be constructed for swift running, having wind-pipes almost two inches in diameter, large lungs and wide skinny nostrils, should be soon out of breath, more so than any other animal. This I have often observed in tame ones, which have neither been scared or alarmed. The Inderskoian mountains, which are full of stucco, are always crowded with them, till the Kirguese make their appearance, who hunt them incessantly. This animal is very fond of the small, white wormwood, which grows here in abundance. They were, now, so numerous, that the little escort, which attended me, shot above twelve of different ages. We saw here, also, in quantities, a peculiar species of uncommonly beautiful lizards, running about in the sun, and a number of race-hares and marmots.

In a salt district, situated upon the heights of Tschornoijar, about 110 miles from the Wolga, where there is not only a strong salt-lake, but, also, stone-salt; and, again, about thirty miles east of it, are two
cliffs

clefs in the mountains, which the Kalmucks hold as sacred, as do the Kirguese the Jlezkian mountain, and offer to them, as vows, harness, arms and other things, and give this fictitious story as a reason for their so doing;—that their Delai-Lama had once passed a night on one and dined upon the other. In the cleft of one is said to be some water, and the Kalmucks say, that one of their countrymen, having once fallen into it, came out again in the Wolga, safe and unhurt.

The Inderkoi mountains are so full of salt, that the Cossacks, who set out in spring, to fetch salt from this place, take as much fresh-water with them as they think they shall have occasion for, there being no fresh-water springs.

I no sooner reached the top of this mountain, than I was struck with a large lake, resembling an extensive plain, glittering with snow and encompassed with heights, which, on a calculation I made, is above the level of the river Jaik. This lake may be justly called a wonder of nature. It lies in a straight line scarcely seven miles from the Jaik, about 125 miles south from Jaizkoi-Gorodok. I could not determine it's extent, but the Cossacks say it is sixty miles round; it is, apparently, about ten miles in circumference. It wears a round form and has many bays. The water is not very deep, for I rode into it near a quarter of mile and was not up to the girths of my saddle. The water of

this lake is so saturated with salt, that large cubic grains are constantly forming upon the shore, when not prevented by moist weather, and it's borders seem to be sowed with salt. From the constant evaporation of this lake, the land, all round, is covered with a crust of salt, seven inches thick. This crust is as hard as stone, of a pure white, and, when broke, exhibits an extraordinary chrystalization in irregular bodies. Underneath this crust, lies a gravelly, grey and loose salt, which may be easily pierced. I ran a Cossack lance, which was ten feet long, down into it, without finding any bottom; of course, to what depth this salt lies, cannot be determined. This is the salt which the Cossacks gather, being small and fit for use, loading their little waggons in the lake itself. They wash it with salt-water, on the spot, till it loses its grey colour. I dare not venture a supposition respecting the formation of this loose salt. I must also confess my ignorance about the origin of that fine, white cubic salt, called, by the Cossacks, *Tamosa Kaja Sol*. It resembles small and large hail, promiscuously scattered on the muddy shore and touching the ground only in one point. The largest cubes were about the size of a small walnut, the chief no larger than peas and many not so large as the smallest hail. Their whiteness is dazzling to the eye and they are so solid, that it was with difficulty I could squeeze them between my thumb and finger. Their substance seems to be a sort of alabaster-like stone, the parts of which are almost invisible with

with a magnifying glass. I could not discover any chrystalline configuration. This salt keeps itself very dry, and, notwithstanding it's soft consistency, dissolves slower in water than stone-salt. If you pour into the salt-water a dissolved alkali, it milks very much, but, if suffered to steam away, by boiling, without any mixture, it has the appearance and quality of kitchen-salt, though adhering much, in crusts, about the vessel in which it is boiled. This generation of cubic-salt, is only found after a long drowth accompanied by storms. When I was at the lake, on the 20th of August, it was plentifully to be met with, but on my return to it, in September, some tempestuous rains had swept it quite away. From these circumstances it may be concluded, that the cubic pieces of salt, are formed by some attractive power from the particles of salt evaporated from the lake.

This mountain is full of a variety of minerals, coals, stucco, allum, marcasites, belemnites, oyster-shells, &c. The Cossacks pick up these shells and prepare them as a medicine for children, against acidities, pouring water into the shell and scraping off some of it's inside substance with a knife. They suppose, that where a flash lightning falls, such a shell will grow in the space of three years after. The Kalmucks fetch, also, from this place, a kind of deep-red marle, in dust, of which there are whole hills on this mountain,

mountain, and with which they paint their tent-poles red.

Of the vegetable kingdom, this mountain boasts of the bushy orach, (*Atriplex Glauca*); the pretty salt-wort, (*Salicornia Arabica*); and, another species of this plant, not yet discovered by botanists, (*Salicornia Strobilacea*). The latter grows on the low and moist part of the borders of the salt-lake, and both the former on the higher. Besides these, the thorny glasswort and (*Salifolia arbuscula*): also, the thrift (*Statice Suffruticosa*).

As to the animal kingdom, I could have gathered plenty of insects from the flat borders of the lake, brought here by storms on it's wide waters, washed ashore dead, and perfectly preserved by the salt-water. Among them were several rare species, peculiar to the hotter parts of Asia, the large, wandering grass-hopper, a smaller species (*Gryllus Italicus*), the scorpion-spider (*Phalangium Araneoides*), and many more.

On the 21st of August I continued my journey along the line to the next station, and met, in my way, with a plant which the Kalmucks drink as tea. At Kulagina-Gorodok, a little fort, on an arm of the Jaik, more spacious indeed than the fort Kalmykowa, but not better built, though it has a church and a garrison of Kalmuck and Tartar soldiers, under an ataman, who

who commands the whole line, but who is, himself, subordinate to the commander of Gurjef. Some of the Tartars have, here, water-melon gardens, where this fruit thrives uncommonly well, and from whence they supply other stations, who are in want of this production. Among the Kalmucks lived a Sungorian priest or gellung, who had ten scholars (*Mandschi*). His burchans were Ajuscha, Dshak-dschimmuni, and another figure resembling the former, which was holding his hands across before him, having, in the right, the sacerdotal sceptre, and, in the left, the bell; he called him *Odschirrdarr*. All were neatly cast in copper and strongly gilt. I will give my readers two other Kalmuck stories, which may serve as proofs of their auspices.

I have already mentioned that the white owl is much looked up to and considered as a sacred, prophesying bird. To the flamingo (*Phoenicopterus ruber*) known in Russia by the name of *krafna*, or red goose, they shew an absurd antipathy, whilst they almost make a burchan of the other. They believe the latter to be possessed of an evil spirit, look upon it as a bird ominous of ill, turn away their faces from it and load it with imprecations; but, of the red duck, which is also a sacred bird, they say it is the purest of all the winged tribe. The crane is also held to be one of the purest of birds and is, therefore, never killed,

Near Kulagina, is a piece of Russian antiquity, worth notice. It is a considerable intrenchment, known to the Cossacks by the name of Marinkin-Gorodok. Marinka, it is said, was a woman, who, in former times, committed robberies from this place. Nothing is more probable than that it owes it's fortification and name to Marina of Senomir, spouse to one of the false Demetriuses. Marinkin-Gorodok, lies about a mile north-east of Kulagina, where the Jaik once had it's course, though now at the distance of three-quarters of a mile. The intrenchment represents a direct angle with oblique sides: from one end of the intrenchment to the other, it is 335 paces. Within the intrenchment are, here and there, turf-hills, arising from subterraneous habitations, which the Cossacks affirm to be there.

Before I quit this place, permit me to mention the condition of a patient afflicted with the leprosy, a youth of twenty.----From his infancy, he was always said to be of an infirm constitution, but never had any distemper till the age of fifteen; at that period, two red blotches were observed upon his face, as broad as two thumbs. He continued, however, in good spirits and the blotches disappeared before the year had elapsed. In the second year came forth, by degrees, over his whole body, reddish and blue spots, accompanied by a density of skin, with which he was afflicted when I saw him. With the leprosy he felt a weakness in all his limbs

limbs and a smart pain in the joints. This weakness and pain frequently attacked him to such a degree, that he was unable to move either hand or foot, yet his joints were not the least swelled. He was once bloodied, and his blood was thick and of a high-red colour. The pains were not always equally violent, but remitted for some days and were easier: rubbing the joints with oil of turpentine relieved him. In the third year, his mouth and throat became full of little boils, which affected his voice, and made him, as it were, short-breathed. He had, also, a continual cough and dryness of mouth. Even before the leprosy, he seemed to have the itch and it continued with it. Notwithstanding this disorder, he had a good appetite and when the cough and pains in his limbs did not prevent him, performed his accustomed labour. His urine was reddish, but not unnatural. He never experienced any inclination to venery; the palms of his hands and soles of his feet were free from the leprosy, but the skin hardened and peeled off from them; to remedy this, they were often anointed with fish-fat. The cause or the distemper is unknown, but several of his mother's relations are said to have been afflicted with the same. His parents never refused to attend him; they did not drink out of the same vessels, but lived with him, went into the same bath and never experienced the least of the disorder.

In my way to Gurjef, I took notice of the caper-bean, (*Zygophyllum fabago*), which is, in that salt quarter, a common weed and in great plenty. It was now, the 22d of August, full of ripe seeds of which they make capers, about Astrachan. As it was quite decayed, I could not determine it's species; so far I could gather, that it belongs to the star-flowers, (*Compositifloræ*), and it's leaves are of middle size, like those of purslain. It grows up with straight and branching stalks, about an ell high, and bears flowers on the point, which are said to be blue. The calix seems like that of the hawk-weed, (*Hieracium*), and the seeds hairy, (*pappus pilosus sessilis*).

Near the station Saratschik, on the eastern side of the river Jaik, are the ruins of a mausoleum and the remains of a Tartarian town, probably the asylum of a Tartarian horde, which time has obliterated. The bulwark and ditch is still to be seen, and appears to be from three to four miles in circumference. In the middle of this area is a canal, which served as an aqueduct. Within the bulwark are many traces, foundations and vaults of brick-buildings, which shew that in the middle of the town must have stood some considerable edifices. The bricks are oblong and tolerably large; there are, also, some pieces of brown stones, with impressions of shells, no where else to be seen in this neighbourhood: likewise broken pieces of china-vessels, some white, some a beautiful yellow and highly

ly glazed. As the whole foil of this town is extremely wet and salt, all the iron-work, which has been found, is so much covered with rust, as scarcely to be known what it is. It is the same with the copper and silver found; the copper almost consumed with verdigrease and the silver changed almost to the innermost part of the metal. I saw there, in some of the Cossack houses, several coral-beads of divers colours, some little, ground and polished topazes, and some stones like cornelian. The sepulchres made here, are of brick, and often little articles of value have been found in them.

In this place, also, was a leprous Cossack, about forty years of age, who had been six years afflicted with this disorder. His first symptom of leprosy, was a large, high-red spot upon his forehead, which presently disappeared; soon after, his body became red, all over, with terrible blue spots, which made his skin so painful that he could not bear it to be touched. Even this disappeared in six months. After this, he felt, by degrees, a pain, but without any swelling, in his arms and hands, which are now so much withered, as to be useless. During the ensuing years, he felt the most violent pain in his legs and feet: his legs swelled and the skin became thick and hard, but he never had any ulcers in his mouth or throat. After some time, the spots disappeared again, and have not broke out since. Other matters, were as I described in the boy. This
man

man had a relation who died of this disorder; yet no one is afraid to nurse him or be about him. They all take care, however, not to eat or drink out of his vessels. The livid colour in his face and swelled appearances, began with the disorder and continued till I saw him.

On the 22d of August, I reached the new-erected redoubt of Gurjef. The Jaik, here, winds and bends so much, that it would be difficult to represent it on a map, and, after all one's trouble, it might be looked on as questionable and unauthentic, particularly as the stream so often changes by inundations in the spring. The whole district is a salt-mine and, in summer, the flies are insupportable. I do not know a more suitable punishment for malefactors than to transport them here, and make them burn ashes of the salt-plants. Since I have been out, I never spent so disagreeable a day, as in this redoubt, waiting for a carriage. Among other salt-plants, I found the two following, new ones, *Polycnenum oppositi-folium* and *Salicornia foliata*, and a species of fly that crowded the air and tortured us exceedingly, met with about the Caspian sea, but new and unknown in Europe.

On the 23d, arrived from Gurjef, two boats, with Mr. *Lepechin*, whom I met here, but a south west wind, which continued all this day and the next, prevented my departure for Gurjef till the 24th,
in

in the afternoon, for, it was impossible to cross the Jaik on horseback, there being no bridges; I went, therefore, by water, and, by this means, avoided the flies and other vermin. The road to Gurjev, by land, does not exceed fifteen miles, but, by water, it was near thirty. We reached Gurjev about two o'clock in the morning, where I found Professor *Lowitz* busy in his astronomical observatory. Gurjev was now the rendezvous of scientific pilgrims, for, besides Professor *Lowitz*, his Assistant *Inochodzof* was there and Lieutenant *Euler*. We could not have chosen a more disagreeable place for this purpose, but the hospitality of the commandant, Brigadier *de Vegejak*, and his social disposition, put us at our ease and made it pleasant.

Gurjev, though small, is about seven miles from the mouth of the Jaik, which empties itself into the Caspian sea, is one of the most regular and well-built, little forts about the river Jaik; its works consist of a strong, square brick-wall with bastions on its angles. The place has but one gate facing the river, which flows near it. Except the house of the commanding-officer, there is scarce a good habitation in the place. The church, like the houses, is built of wood, except the powder-magazine, which is of stone. The garrison consists of a company of infantry and sixty Cossacks, and here live a few merchants, from Astrachan. The place might become flourishing, if they would encourage a trade with the Kirguese and the situation, itself,

was

was not so unwholesome. The few merchants here, carry on a lucrative commerce with the Kirguese, but it might be rendered far more considerable. There is scarce so unhealthy a place to be met with, from spring to autumn. The fort lies in the middle of a salt-marsh, mostly overflowed in spring by sea-water, driven by the southern winds into the mouth of the Jaik. Within the fort, they have raised the ground by art, yet the whole is so salt and loamy, that it is never dry; of course, we breathe constantly a foul air, rendered stinking by sea-mud, even though the weather is stormy. Within doors, one is covered with wood-lice and tarakans, and as soon as we leave the fort, the ox-flies, (*Tabanus bovinus et occidentalis*), make their attack upon us in swarms. It is no wonder that the inhabitants sicken under such torments, yet their disorders are not so general and mortal as one would suppose, and the garrison bill of mortality for six years, though they have no regular surgeon, has been extremely small. Incautious strangers generally pay the tribute of sickness at first coming, and the scurvy in the spring here is a universal complaint; but the inhabitants cure themselves by the leaves of the rapontic and the roots of the reed-mace, (*Typha*).

The saltness of the mires is to be attributed to those most remarkable salt-dews which, in summer-time, are common about Gurjesf. This, to many, will appear an incredible phenomenon, but I am able to confirm
it's

it's truth by many credible witnesses. It would be nothing surprizing to find a salt-dew upon flowers and plants in salt-ground, as they commonly perspire a great quantity of salt, but even the drops of dew that gather in the free air on smooth bodies and the moistness which enters our cloaths, have a considerable degree of saltness. Why then should it be surprizing, that chemists, by a reiterated dissolution and evaporation of salt, have found a certain diminution of the quantity, and hence conclude, that salt may be dissolved into earth and water, and apparently united with both? I must also take notice, that salt-dew may be observed higher up the Jaik and, undoubtedly, the pernicious dews are of the same kind in other hot and sultry climates.

It appears that the saltness of the soil, round Gurjes, ought not solely to be ascribed to the sea-water, for it is only the detained water of the river that overflows this district, and the Jaik, near Gurjes, is scarce, perceptibly salt, though the sea-winds blow. Besides, a little, stucco rock, lying not above a mile and a half from Gurjes, westward, to every one's surprize, in a low and miry ground, seems a confirmation of these remarks, to indicate some hidden salt, and which may, also, be concluded from the strong saltness of the water, which collects itself in holes made in this ground. The stucco, here, as mostly on the Inderskoian mountains, is of the nature of selenites and from this little
hill,

hill, situated between Tschernaja Retschka and an arm of the Jaik, runs a bank of muscle-shell ground, towards the sea. The Kirguese hold this hill, like those of Ilezkaja, sacred. They do not assemble here to celebrate feasts, but believe that some saint is interred therein and, therefore, frequently there bury their dead.

The supposition of concealed salt here is more rational from the salt-lakes in the Kirguisian step, on the opposite side of the river, where the garrison of Gurjef may supply itself with salt, gratis.

Every species of fish found in the Jaik, crowd all the bays here and also the lake; but, the privilege of the Jaikian Cossacks prohibits the garrison from fishing with nets, yet the soldiers have a method of catching plenty, especially barbel, in the shallows, with a two-spiked harpoon.

All the side-waters of the Jaik are full of frogs, among these there is a huge species, which is also found in the Wolga, whose voice resembles the loud laugh of a man. It might, perhaps, be of service to the French nation to send a colony of these frogs into the rivers of France, for there is more flesh on the hind-part of one Jaikian frog, than ten common ones, and they are equally as delicate. The miry bottom of the Jaik breeds also a great many river-crabs, and they are

are larger here than I remember to have any where seen, yet empty, lean and of a bad flavour, and as the crabs of the Wolga, when boiled, are but of a pale-red, those of the Jaik become only of a yellow-grey. Here are, also, plenty of water-serpents, (*Coluber Hydrus et scutatus*), and the common otter, with red spots about his neck.

There is here an undescribable quantity of wild-fowl. The bittern, several species of sea-ravens, the least not less in size than a pidgeon; the spoon-bill heron, brown, red, white and little white herons, and every other kind; night-ravens, among which is the large *Tantalus niger*, the sea-lark, (*Hiaticula*) in great abundance; but the most curious bird they have, is the long-legged plover (*Himantopus*). The yelper, or Italian *avosetta* (*Recurvirostra*), several species of gulls, (*Larus cinerarius et naevius*), also terns, (*Sterna hirundo, naevia, nigra*); and, among the birds of prey, the following hawks; *Falco Lanarius, Pygargus, acroginofus et Nifus*: among the small birds, the rush-thrush, (*turdus arundinaceus*), and the tit-mouse, (*parus biarmicus*), and quantities of all sorts of night-birds. In the fort itself, are many large bats, in such quantities under the roofs, that we may hear them scream every where. We meet also, here, with all kinds of owls, particularly the churn-owl, (*Caprimulgus*), and the *Strix pulchella*. The cause of their abode here, is an abundance of nocturnal insects, which affords them

them a rich subsistence. Swans and flamingos, (*Phœnicopterus*), are only seen wandering in spring; these birds are too shy to live here, but in the more distant bays, they are knocked down with cudgels, at moulting time, by the Cossacks, having no wing feathers to fly and protect themselves. Here are, also, plenty of wild-boars, which the Cossacks hunt with hounds, but not without danger, and kill them with guns and lances. These animals frequent the rushy districts, live on rush-roots and attain so prodigious a size, that the males shall, sometimes, weigh above 600 lb. their colour is a yellowish-brown, but their heads and feet of an iron-grey or black. The bodies of the cubs are iron-grey, with yellow-white spots, and are so wild as scarcely to be tamed; the fat of the wild-boar is a hand deep, but it wastes almost all away in boiling; the flesh, however, is sound and has not the least taste of a wild, ravenous animal.

Otter-hunting is a fine diversion in this country, and catching of sea-dogs, which sometimes come up the river from Astrachan. Their heads and fore-feet are so overgrown with fat, that they resemble rather bottles of fish-oil than animals. A great deal of sea-dog oil is exported from Astrachan in the Russian trade, and is used in the preparation of Russian hides, about Casan. With the addition of pot-ash, they make of it, at Astrachan, a grey soap, allowed to be incomparable for cleaning

cleaning of woolens. It is sold in small, soft, flat cakes, by the name of Astrachan or Tartarian soap.

As to the vegetable kingdom, we find, about Gurjev, the same kind of plants as are the natives of all salt soils. One would scarcely suppose that, on such a soil, any kind of culinary herbs would grow, but we see the reverse. The commandant has a garden, in which grows well, melons, cucumbers for pickling, beet, horseradish, colewort, cole-rape, parsley; and it would bring forth tobacco, celery, cauliflowers, potatoes and water-melons.

I went down the river, between the 25th and 30th of August, to the Caspian sea; which, at the mouth of the Jaik, is of a grey-green colour, but further out, sailors say, it is of a black-green, and that they often observe a phosphoric splendor in it's waves.

In the Caspian-sea fisheries, the beljuga-stone, which has always remained problematical, is often found in the larger species of this fish, and commonly sold at the cheap price of a few rubles. According to fishermen's accounts, this stone is always found in a sack of the *rectum*, or fundament-gut, through which the fish deposes it's excrement and spawn. They are sometimes found, also, in the largest sorts of sturgeons. I have known such stones weigh from one to three ounces; they may, with difficulty, be scraped with a knife.

Among the Russian domestic medicines, the beljuga-stone is of great importance, though it does not merit it. It is given to expedite hard travail, in disorders of children and obstructions of the urethra, in small doses, scraped and mixed with water. They ascribe these and some other inconceivable virtues to a stone often found in the bladder of wild-boars, and sold dearer than that of the beljuga, by the name of *Kabannoi Kamen*.

That the beljuga-stone is to be reckoned among animal-stones, and should not be taken as an auricular bone or other natural parts of a fish, is proved, besides the confirmed situation in which it is found, and their different shapes; for, sometimes, they are quite oval and smooth, and sometimes rough and sandy, triangular and more or less flattened; their colour is bone-white and they are of a uniform texture.

‘ The Caspian sea,’ says *Tooke*, ‘ is, at present,
 ‘ no more than a great lake confined within the land,
 ‘ but it is supposed, formerly, to have had a commu-
 ‘ nication with the Euxine-sea and to have spread over
 ‘ all those vast steps, or deserts, of the Jaik, the Wol-
 ‘ ga and the Kalmucks. The multitude of shells scat-
 ‘ tered over all these steps, such shells as are found in
 ‘ the Caspian sea alone and are never to be met with in
 ‘ rivers, the uniformity of soil in all the parts of these
 ‘ steps, consisting, with a very few exceptions, of a
 ‘ pure sand, the general saline quality of the soil, that
 ‘ continued

‘ continued equality of country, and that universal
‘ want of wood, &c. favour this opinion.’

‘ Not to say something of the city of Astrachan,
‘ when we are treating of places so near it, would be
‘ unpardonable. Dr. *Pallas* did not visit this place
‘ himself, but Mr. *Gmelin* did, in 1769, and he tells
‘ us, that this city is situated in the midst of meadows
‘ that border the Wolga, where the river divides into
‘ a number of branches, about sixty miles from it’s
‘ entrance, into the Caspian sea; and is built on several
‘ hills that lie within the compass of it’s walls. It
‘ has a fortress; the city is surrounded with walls, contains
‘ 2,541 houses, twenty-five Russian churches
‘ and two convents. The Armenians have two
‘ churches, the Lutherans one, the Roman-catholics
‘ one, and the Indians have a small idol-temple. It
‘ has a large metropolitical church, built of brick, an
‘ archiepiscopal palace and an archbishop. Here is a
‘ large, botanical garden and a chemical laboratory,
‘ where they prepare salts extracted from plants, the
‘ bitter salt of Astrachan, the juice of liquorice, distilled
‘ waters, &c. Every Apothecary’s shop, throughout
‘ the empire, belongs to the crown and they obtain,
‘ from this place, every medicinal plant they
‘ want; the apothecary here established, supplies all
‘ Russia with liquorice-juice and glaubers-salts, and
‘ being near Persia, and, of course, able to procure
‘ curious simples from thence at a cheap rate, he is

‘ frequently ordered to supply the drug-warehouses
‘ with them, at Petersburg and Moscow. In one part
‘ of Astrachan, is the imperial comptoir of the gar-
‘ dens, which contain above 300 persons. These fur-
‘ nish the court of Petersburg with every kind of fruit,
‘ and are now establishing vineyards.’

‘ In the gardens of Astrachan, grow all sorts of Eu-
‘ ropean, culinary herbs, except the potatoe and the
‘ artichoke. They plant a great quantity of pimento.
‘ Pears, apples, cherries, peaches and mulberry-trees
‘ thrive exceedingly well; but, as caterpillars destroy
‘ most of the blossoms, they bear but little fruit. They
‘ lay their vines under-ground, all-winter, and, as the
‘ heats in summer are exceedingly sultry and showers
‘ rare, gardens are watered by wind-mills, which raise
‘ the water from running streams into trenches, that
‘ run through the grounds and sufficiently refresh the
‘ plants without throwing it over them.’

‘ This city having suffered prodigiously by a late
‘ fire, the court of Petersburg has ordered the bank
‘ to advance 170,000 rubles for building brick-houses,
‘ which the inhabitants were to be put in possession of,
‘ on paying the net cost of the building. The poor to
‘ be allowed ten years to pay the money, but these
‘ buildings are carried on so slow, that many generati-
‘ ons will pass away before Astrachan is finished.’

I returned

I returned to Gurjef on the 31st, and, though we had a dreadful storm before us, not a single drop of rain fell upon us. As I went further on, I found that the rain had fallen like a torrent and rendered the roads so bad, that our horses and wheels sunk upon the salt-spots so deep, that we could not get them out for half an hour. This violent rain had extended itself further than the Indersköi-mountains, for, on the 1st of September, I paid a second visit to the salt-lake there. It was, at this time, full of Kirguese, either encamped or wandering about with their herds, yet, though I had an escort only of four Cossacks, they behaved most friendly and sociably. These guests had entirely driven away the antelopes, whose arrival here is always considered as the approach of the Kirguese, for they constantly fly before a Kirguisian encampment.

On the 2d of September, towards night, I came to Antenowa, in my way back to Jaizkoi-Gorodok, and, the same moment as I left it, arose a violent, hot hurricane, called, by the Tartars, *Buran*, from south-west, and continued during the whole night. The air was so close and sultry, that we had almost lost respiration. *De L'isles'* thermometer was, the whole night, at 110 deg. and, after sun-rise, when the wind was abated, at 115 deg. Such sultry storms rising from east and south-east, especially in autumn, in these districts, are not rare, and are looked upon as fore-runners of heavy tempests. We had just reached Koscha-Charof on the

5th, at night, as the air was calm and somewhat cooler, when some dreadful, tempestuous clouds, from south-east, gathered over us and broke in showers and uninterrupted flashes of lightning, which rent the elements, and continued, for some seconds, in form of fiery columns. On this account, we advanced but slowly. At break of day, September 6, we reached Budarin and, in the afternoon, Jaizkoi-Gorodok, at the distance of 361 miles.

‘These winds,’ says *Tooke*, ‘are as hot as if they proceeded from the mouth of a furnace; they generally rise about two o’clock in the afternoon and blow till after midnight. During the time they blow, sheep will often fall down dead in numbers: the blood foams out at their mouths, and they swell and putrify so fast, that it is not possible to save their skins. A wind of this sort was felt at Antibes, in Provence, in the year 1756. It happened during the greatest heat of summer, which is well known to be very intense in that country; and the woods, at a few leagues distance from the town, having taken fire, whereby more than a thousand acres were consumed; it appeared to those who were exposed to the wind, as if scalding water was thrown over them. The typhons of Egypt are of this kind.’

Jaizkoi-Gorodok. The tempest I have just now mentioned, put an end to the present summer, and we had not

not one perfectly agreeable day after it. It was time, therefore, to go to Ufa, where I designed to pass my winter; but, being desirous first of satisfying my curiosity, by taking a view of some remarkable things in the step-mountains here, I went, after writing down my observations, on the 15th, to that mountainous district, from whence springs the brook Derkul and flows more than fifteen miles above Jaizkoi-Gorodok, on the right, into the Tschagan; and I sent two students on before me, to another brook.

A mile or two from the town, I passed the burial-place of the Tartarian Cossacks, which is on one of the steps. Here is a wooden house of prayer and many grave-hills, having at each southern end a pole. Several such ancient burial-places are to be met with between both Tschagans and the Jaik, derived, perhaps, from the Nogayans that formerly resided here, for they are not Kirguisian tombs.

About eighteen miles from Jaizkoi-Gorodok, on a dry, hilly-step, is a high tumulus. Several Tartars were here encamped with their herds. A salt-plant, which I had not yet seen, was here in full bloom, (*Attagalus Cornutus*). Whole flocks of bustards were here on the step and departing for warmer climes.

On the 16th, we saw many wild goats roving at some distance. Towards night it began to rain and grew so

dark, that I was obliged to spend the night in the middle of a step, where we could scarcely gather as much brush-wood and reed as was necessary to warm and dry ourselves. On the 17th, we returned to Jaizkoi-Gorodok, during a continual rain. Larks, wild pigeons and other wandering birds repaired, in great numbers, to the southern climates, which foreboded an early winter.

On the 21st of September I set out for Ufa; but, the day before I left Jaizkoi-Gorodok, a violent storm rose from the south-east and brought, about night, tremendous thunder and such heavy rains as could only be compared to a spout; so that, within an hour, the fields were covered with water six inches deep, and, in the course of the night, the wind changed to the north-east, and brought snow and frost so severe as to freeze the waters and make every place around us a scene of ice. During this weather, crowds of cranes and bustards travelled downwards along the Jaik, and vast flights of small birds, a species of Ortolan and equal to ours in flavour, (*Emberizapasserina*), ran about the roads without being the least shy.

The village Kargalinskaja, through which we passed, not many miles from Orenburg, is delightfully situated on the north and right bank of the Samara. The houses, which are mostly well-built with stone-foundations and provided with airy rooms, are in number 300, and the
metsched

metfched or house of prayer, is a fine and pleasing edifice. Most of the Tartars here settled are of Casanian origin, but differ a little from the Casanians in their manners and customs, and are a trading and substantial people. It will not then be wondered at, that they should study their persons and have a little Tartarian gallantry among them. These people, like our modern Turks, clear away the hair from every part of their bodies, with an ointment of lime and arsenick; and the women, in imitation of Oriental nations, paint their eyes and nails. The Tartarian ladies make use of a certain plant called *Kina* or *Kna*, dry it and reduce it to powder, which being mixed with allum and fresh goose-dung, they bind, for one night, over their nails and it gives them a yellow-red colour, which, among our European beauties would surely, as an ornament, be rejected; though it be an instance of Oriental taste. Spanish-paste is an imitation of that used by the Tartars and Moors, for extirpating their hair.

They grow a great deal of wheat about Kargalinskaja, of which they make a fine flour, notwithstanding the soil and situation is more unfavourable to this grain here, than in some other places; for, according to farmers theory, wheat will do well in very open countries, where wood will not grow, and here there is little else than birch and white poplars. The country along the Samara, is so rich with metallick ores, that one cannot travel half a mile without seeing some mineral enclosures,

fures, belonging to different manufactories at Orenburg.

The badness of the weather and the snow, which began to cover every part of the ground, would not permit me to make many useful observations, I therefore passed Orenburg and made the best of my way to Ufa, through many Baskirian villages and stations. The Baskirs were now assembling themselves with their hordes about their winter-quarters. They differ from other nomades, by living, during the winter, in huts built of wood, in the Russian way. Near these huts, they lay stores of hay in high stacks round about trees, to feed their cattle, in case of necessity. Most of their houses are very small and the room within is provided with wooden benches to sleep on. The Baskirians have a chimney on the right hand of the door, resembling a cylinder, which grows narrower at top. It is open below about the height of a man, made with wooden stakes and brush-wood, well plaistered with mortar. In this chimney they burn faggots, set up an end. Near the chimney is a little hearth, whereon they set a boiler to dress their victuals, and this boiler has a particular pipe to let out the steam. Their chimneys are well-contrived, but as the wood burns well and very bright, it hurts the eyes more than the smoke, of course, they labour constantly under some ocular disorder.

The

The principal piece of household furniture in the filthy hovels of the Baskirians, is a high bottle, like a leathern vessel, fastened on a wooden frame and always full of sour milk, or *arjan*. Whilst the cattle yield milk and they have store of honey, the Baskirians live jovially and use no other drink than sour milk or mead; but, as they seldom like to clean these vessels, the offensive smell may easily be conceived. In winter, or when travelling, they supply the want of this drink by little cheeses (*krut*) made from very sour milk and dried in the smoke; this they bruise and soak in water, which makes a sourish drink. Their usual food is thin broth, which they send with wooden spoons partly down their throats and partly over their beards. They sow no more wheat than they want for their own use, and this is but little. Indeed it is little to be expected that they ever will become good husbandmen, as they are so much taken up in breeding bees and horses, which enriches them sufficiently for the indolent manner of life established among them. They do not eat bread every day and are said to bake it like the first men. Their women kneed, with unwashed hands, a cake with water and salt and bury it in the hot cinders of the hearth; they then put a stick into the cake and toast it before the fire, till it is brown.

The dress of the Baskirian women, differs little from that of the women of Tschuwa. The most essential difference is in the head-dress, where, instead of that
long

long latchet, beset with silver-coins, which flows down the back, being fastened to the cap; it is here fixed to a quadrangular conical plate, fastened on the opening of the cap on the top of the head, the whole richly decorated with little silver-coins, or plates. Both sexes wear shirts of coarse linen, made of hemp, or from a thread spun from the large nettle, very wide trousers, buskins or slippers. The poor wrap their legs in rags and wear shoes made of the bark of a tree. The nettles which they spin for linen, grow in a fat soil near their habitations, and are dried in autumn with the hemp. After this, being watered, the outside rind is taken off with the hands, by breaking the stalk, and then beaten in a wooden mortar, till they are reduced to tow. As to their persons, they are, without exception, the filthiest and worst behaved of all the Tartarian or Tschuwan nations; but I shall have an opportunity of speaking of them again,

Before I could reach Ufa, I was obliged to pass the Uralian mountains, which are full of minerals and many of which are covered with wood, and the neighbourhood inhabited by Tartars, Tschuwanians, &c. I passed a copper-mine, worked by the Baskirians.

Upon the rocky mountains, along the Belaja, which I passed in great haste, grows the savin-bush, used by the Baskirians, to smoke their sick children with. They also put it over their doors, from an idea that it
has

has a particular virtue against witchcraft. It differs not in the least degree from the common savin, (*Sabina*), except that it's bluish berries generally contain but one, two or three seeds. The forests here produce considerable larches, which, like the savin, is not to be seen westward of the Uralian mountains. On the old trunks of this tree, we find not only the medicinal larch-mushroom, (*Agaricus Officinarum*), which the Baskirians bruise and strew upon the wounds of cattle, but, also, a rosin oozing out, which sometimes is resinous and sometimes gummy, and dissolves perfectly in water. By order of the imperial college of physicians, a great deal of this gum has been gathered in the province of Ufa, which, in pharmacy, may be used instead of gum-senega or Arabian-gum. It's colour is not so clear, but it has such a degree of viscosity or adhesion, that it may answer all the purposes of foreign gums, in mechanics and manufactures. It is remarkable that a certain tree, a species of the resin-tree, similar to this, produces sometimes resin and sometimes gum; and I have now an opportunity of confirming an observation of the learned *Dr. Rinder*, respecting the larch-tree, that in spring it produces a gum, in winter, a degenerated juice, but, in autumn, a real resin. The same naturalist has assured me, that in April, when the larch issues forth bladders, a fluid resin may be gathered from it, in every respect similar to the balsam of Mecca. Nay, some pretend it may be extracted from the white fir.

It

It may readily be supposed, that in the neighbourhood of the Ural, there are many noble birds of prey. Here is a kind of vulture-hawk and other beautiful species of hawks, (*Falco barbarus et arborarius*), also divers kinds of eagles. A large species of owls, (*Stryx Uralensis*), is also very common here, though I never saw them described any where.

Ufa. I reached Ufa, after travelling 370 miles from Jaizkoi-Gorodok, on the 2d of October, wintered there very disagreeably and did not leave it till April. In the vicinage of this place, on the high roads, are three or four houses of accommodation for travellers, kept by Russians.

Ufa is an ill-built city and very much decayed. The neighbourhood being richly peopled with Baskirians, it's situation would be a bad one, if it was not a place of security against the invasions of these Baskirians and others. It contains about six or seven hundred houses, dispersed in irregular lines, on the bank of the Belaja, and, owing to a bend of that river, forms a kind of crescent. Torrents of snow and rain-water rushing down from the heights above it, encompass the city all round, and, the houses, being built on the declivity of a hill, have a good effect and contribute to it's safety, which now, indeed, seems established, by the peaceable disposition of it's neighbours and the fortification of it's frontiers. The ancient works of Ufa are mostly

mostly decayed, and there is scarce a trace to be seen of that line of palisadoes, that ran near five miles along the town and covered the fields and pastures belonging to this place, in any trouble or commotion: there remains only, now, some reliicks of an old watch-tower.

The situation of the city, it's six churches in several quarters of it, and particularly it's stone-built cathedral, standing with many other public buildings on an elevation, surrounded with palisadoes, give it the appearance of an amphitheatre and make it look better than it is; but it is dreary enough in spring when a traveller comes and at other wet times. The corrupted manners of the people render an abode here the more disagreeable, for there is scarce a substantial or civilized inhabitant, except those persons who belong to the office of mines and manufactures, the city not being able to boast of a regular trade or a good manufactory, except a few tanners, who have here a tann-mill, worked by one horse. Indeed they have no workmen. As to their trade, it has not been extended further than to travel to Casan, to fetch goods to sell to the Baskirians, whom they supply at an exorbitant rate, and who come here to buy or to attend the court of justice. The inhabitants indeed are so careless and so indifferent about improving their state and situation, that they suffer the Casanian and Ufian Tartars to run away with the lucrative trade of honey and wax, and a few more important articles, as marten and bear-skins, horses

horses and cattle. But this inactivity is the more deplorable, as Ufa, by it's situation, might become the chief magazine of the whole regency of Orenburg, if the inhabitants had the least spirit of trade in them; the transport by water being practicable through the Rama and Wolga, to the innermost parts of the empire, even to sea-ports. By the communication of the Belaja with the other rivers and the arms or side-waters running from the Uralian mountains, rock-salt is conveyed to great distances; for vessels are built here for this purpose and always lying at anchor at Ufa.

The district of Ufa, is inhabited on the west, south and north-west, by Ufian Tartars, related to the Casanians, but settled here long since. They are very numerous, throughout all the land lying between the Belaja and the river Ik, which falls into the Rama. The Tartars are, of all the inhabitants of the Ufian district, the most industrious husbandmen and generally men of property; and, indeed it is no wonder, that by their economy, they should prosper well in a country abounding in excellent pasturage and woods profuse with all the advantages that may be derived from hunting, fishing and breeding of bees. Their method of husbandry is this: they cultivate all the land round their habitations and divide a field into three parts, one of which lies fallow every year, in which fallow part they let their cattle run, which is as good as a dressing. Thus are their fields fertile for years and fit for wheat,
which

which they do not neglect. Should the fertility of such spots fail, and they cannot find a step near enough to their villages, they will remove their wooden houses to some other place; on this account, they do not hedge in their huts, but, in winter-time, keep their cattle in inclosures, and, when the cattle are abroad on the step, in summer-time, sow those enclosures with hemp.

In their way of living, they are tolerably neat. Men of property have, besides their usual habitations, a summer-residence, with a Baskirian chimney and a large bench to sleep on. The way from one to the other is laid with timber. Few marry more than one wife, none more than two. In all their villages, they have clerical school-masters, who teach their youth to pray.

The female-dress differs not very much from that of the Casanian Tartars. Their common dress is, like that of the Baskirians and the people of Tchuwa, made of coarse linen, worked slightly with the needle about the neck and wrists. Girls are never seen but in their best head-dress. The woman's cap fits close to the head, is cut out in front, fastened underneath the chin and buttoned on the top of the head, the greatest part of which is covered with old silver coins, or pieces of tin cut out to resemble coins; but the front border of the cap is ornamented two inches broad with red coral beads,

narrower about the cheeks, and another row of the same beads runs from the top of the cap down to the part that binds the cheek. From behind the cap hangs down a band, above three fingers broad, which passes through the girdle and so far is decorated with small coins and tin plates, but further down to the joint of the knee, with corals and fringes. Two other small bands, similarly ornamented, go from the cap to the girdle, to which last they are fastened by their fringe-ends. Behind the ears, is fastened to the cap, a breast-plate, beset with silver-coins, proportionably ornamented, and large or small, according to the wealth or rank of the wearer, hanging from underneath the chin down upon the bosom. Over the head is a veil, the tops of which hang down on the back. Girls caps are quite round and not cut out upon the forehead; the breast-plate is very small and narrow, no large band hanging down on the back, only the two small ones, and sometimes not these. They wear their hair, like the women, braided into two tresses hidden in the nape of the neck, and upon it they sometimes pin a little escutcheon, ornamented with coins and fringes. Commonly, their head-dress consists only of coral-beads, as the best and rich head-dress is the gift of the bridegroom, when a young couple is going to be married. But among the more wealthy of these people, girls caps are also ornamented with coins. I saw a girl, the front-point of whose cap was much lengthened and carved in wood. I also saw a girl who wore, as an ornament,

ment, two triangular flaps beset with coins, and made round on the lower-part, which were fastened together on the forehead, behind and underneath the chin, and covered only the sides of the head, leaving the whole head of hair bare. Except these little changes in dress, there is no difference between the Ufian and Casanian Tartars. Their language and manners are the same, for, in the district of Ufa, they live promiscuously together.

The environs of Ufa rise by degrees in considerable hills, which, at some distance from the city, are overgrown with woods of mixed trees, and higher up the Ufa is still more woody. The mountains are limestone and stucco, with, now and then, a mixture of bad alabaster. This district has no ores, except a few veins of a copper that is not worth the digging. Petrifications are very rare among the lime, yet I found some madreporites up the Ufa, and they shewed me, in Ufa, a very large knuckle-bone of an elephant, which had been found with the head, &c. and some other bones of this animal, in a washed bank of the Belaja, above Ufa, and was in a tolerably sound state.

There are also upon the heights, west of this city, some large over-grown tumuli, which have been opened many years. Three of these tumuli, situated on a very elevated spot, strike very much a scrutinizing eye. Some say, these were the tombs of governors,

who resided here before this district submitted to the Russian sceptre, and it is also said that all neighbouring Baskirians paid tribute to these governors. Indeed there are many monuments of antiquity above Ufa, which shew that this place was inhabited by a people very different to the present. There are, on the other side of the Diouma, not thirty miles from Ufa, erections that certainly were not built by the present people; these are a kind of sepulchral chapels, built of brick, and have round them many Arabian or Koptian tomb-stones, with inscriptions. Mr. *Krafft* has given us many. The inscriptions contain the name and quality of the person interred, the year he died and some moral sentence beneath. Here follows a translation of two.

This Stone
is placed for
MINKA ARTSOF
in the 1112th year of the Hegyra.
All men are mortal,
God only is eternal.
He that worships God, saith the Prophet, and abstains from sin, is one of Mahomet's nearest relations.

GHAS HOUSYAM BYATH,
Learned in the Law,
And
By the rules of Justice, a Judge,

Lies

Lies here dead.
To thee, our only God,
We offer up our prayers,
That thou may'st have mercy on him,
And grant him favour,
By remitting him his sins.
He died in the year 744,
In the 7th night of the sacred month.
He laboured, and would have continued so to do,
But Death, who frustrates the designs of men,
Hath cut him off.
None of us find here a lasting home.
On viewing this tomb
Think on
His last hour,

The present winter was not very rigorous, yet it was disagreeable, on account of it's dark and stormy weather. The most violent frost was felt in the third week in November, and, on the 23d, we had storms in which many travellers, on the desarts, lost their lives. These storms continued the whole month of December, almost without interruption, yet the cold was not very severe. The month of January was moderate, that of February very temperate, but the month of March concluded the winter with a still greater frost, that continued to the middle of the month, accompanied by a deep and universal snow, which was the principal cause of the late inundation.

The

The birds of passage appeared with the end of March, flying towards the south; from which quarter, after the river was freed from the ice, we saw a great many common geese, (*Anser Erythropus*), seeking a colder climate. Wood-cocks and the sea-pye remained in great numbers, even before the ice broke. and sought their food on those heights that were not covered with snow.

Having sent some of my retinue, in the month of February, back to Gurjev, near the Caspian sea, in order to spend the spring there, I will, from the observations they made, add here several remarks concerning the arrival of birds of passage, in that more southern district, not quite useless to natural history. The river Jaik began to break on the 5th of March. Long before this and in the latter end of February, all sorts of sea-mews were seen in flocks upon the ice, which had not left the Caspian sea during the whole winter. With the last of February arrived large flights of swans, geese, ducks and bitterns, evidently from the west. Bitterns come from the south, but never from the north-west. The heron was the only bird seen singly, after the water was clear of ice: but the latest, and about the middle of March, appeared the spoon-bill, heron and sea-ravens, (*Pelecanus Carbo et Pymus*). Land-birds and birds of prey, were at hand with the end of February. There was also straying, at this time, a fine species of large and black larks

larks, (*Alauda Persica*), which, commonly, do not exceed the 50th degree, but seemed to seek their home, which is, probably, Persia and India. The hawk of passage, (*Falco barbarus*), seemed to come the latest among all other birds of prey; yet there was one shot, near Gurjes, on the 4th of April, though this bird seldom frequents those flat countries, but inhabits the famous high mountains in the province of Ufa, where they build their nests and pass the summer. The last arrival of all birds of passage, was a beautiful species of quite green bee-eater, (*Merops Tartarica*), in the beginning of May: these dwell only in the vicinage of the Caspian sea and are never seen higher up the river Jaik.

Swallows were seen on the 15th of April, whilst the weather was warm and serene; but as, on the 17th, the south and west-wind began suddenly to blow north, and caused a sharp frost till the 19th at night, these birds and other little ones disappeared, yet became visible again on the 20th, when the weather grew mild. This circumstance occasioned a curious observation. On the 18th of March, I received, by one of my people, whom I had sent to Gurjes, a common swallow, which a Tartar had found lying in a field, apparently dead and stiff with frost. This swallow had scarce been a quarter of an hour in my room, which was moderately warm, than it began to breathe and at last it fluttered about the room, where it lived some days, till

it died by an accident. There remains not a doubt, therefore, but that those swallows which have been found in winter in fishing-nets, clefts and hollow trees, apparently dead, may be made lively again by warmth; there being reason to believe that they are only benumbed by accident, perhaps by some sudden autumnal frost, and passed thus the winter in so torpid and extraordinary a state, which seems to run counter to the laws of nature; and indeed we should find here, in winter, many more swallows than we do, if they did not retire with other birds of passage to a warmer climate.

The budding of trees and their bloom was, this year, a whole month later than it was last spring, about the Samara, even some weeks behind the trees of Orenburg, of which I had an account. The apple-tree, in the neighbourhood of Ufa, began to bud on the 20th of April, and was in bloom the beginning of May; not not much sooner, the wild, black cherry, (*Padus*). and service-tree, (*Sorbus*); much later the plane, the hazel, the way-faring tree, (*Opulus*), the cornelian cherry, (*Cornus Sanguinea*), the elm, the linden and the oak.

END OF PART I.

T R A V E L S

THROUGH

Siberia and Tartary,

PROVINCES OF THE RUSSIAN EMPIRE;

By S. PALLAS, M.D.

PROFESSOR OF NATURAL HISTORY, &c.

PART II.

I Now prepared to set out to cross the Uralian mountains, in my way to the province of Isetta; dispatched a soldier on the 10th, with necessary orders to mend the roads and bridges, and followed, myself, on the 16th. Some few miles from Ufa, on the right-hand of the road, is a deep hole, called by the inhabitants, *Besdonnaja Jama*, (bottomless pit). Three years ago a murrain among the horned cattle raged dreadfully,

ly, and great numbers died. They carried the carcases of these and threw them into this pit, which occasioned a large troop of mad dogs to assemble about it, and rendered the district so dangerous, that a company of armed soldiers were sent out to clear them away.

At the distance of about twenty-five miles from Ufa, I slept, for the first night, in a village that contains but ten houses, it's inhabitants are of that sort of people called *Tepterei*. These pay but a small poll-tax to what others pay, but must furnish the crown, gratis, with carts and horses, to transport the rock-salt of Jlezkaja, and the number of this people, in the province of Ufa alone, exceeds 30,000, consisting of Tartars, Tscheremissians and those of Tschuwa. The Tartars, residing here, are the offspring of the Casanians and differ from the Ufa Tartars. I occasionally met with some of these people. The common dress of their women is a shift of died linen or cotton; they wear on their head the veil *Tastar*, with a blue and green ribband, laid round the head in form of a garland, as do the Casanian Tartar women, putting on the rich head-dress only at festivals and on solemn occasions.

They are here so industrious in breeding bees, that some families have above 400 stocks in the woods, which yield them annually upwards of 1600 lb. of honey. Their method of breeding them is the Baskirian. They hollow the trunks of all sorts of trees, (but prefer those

5 JA 53



BASKIRIAN BEETHIVES

Barlow sculp.

Barlow del.

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those of hard wood), twenty or twenty-five feet from the ground, if the height of the tree will admit it. When hollowed, they work it smooth on the inside. The Baskirians are very clever at this work. All the branches below the hive are then cut off, to prevent the bears from climbing up, and notwithstanding this care, and various means are used to keep them off, and destroy them, these animals are very hurtful to the hive in the Uralian forests; they frequently fix sharp knives, sickles, and other iron weapons, &c. on several parts of the tree, the cutting part turned upwards, so that a bear will go up without hurting himself, but in coming down again, he wounds himself in such a manner as to lose his life. They have a contrivance also, by which a bear climbing up touches a cord, which shoots an arrow at him, and pierces his heart. Others hang on the most distant branches with long ropes, a large board, so that it will reach to the hive, and there tie it with bast: the bear finds his seat on this board convenient for opening the hive, sets to work, gnaws through the bast to get at the hive, which lets loose the board, and off he swings, when, if he is not immediately thrown down by the violence of the motion during his fright, he must resolve at a dangerous leap, or patiently remain. If he falls or jumps, sharp-pointed wooden pales are placed underneath to receive him; if he stays where he is, he is killed with arrows or fire-arms. Sometimes a bear is watched and killed either upon trees, or at night about the stocks he has begun to molest, or near some carcase.

carcase. In winter, they trace bears in the snow, hunt them with hounds, and kill them with lances.

Another enemy to bee-hives, is the bee-eater, which they strive to keep off by surrounding the hives with all kinds of thorns. Nay, the Tartars believe there are persons whose very looking on a hive is injurious to the bees. To guard against this, they suspend, especially before such hives as are near their houses, the bones of a horse's head, or other bones, that the eye may first fall on these objects, and thus avoid the superstitious influence of magic looks.

This whole district is rich with martens of a good kind, whose skins will sell from 2s. 6d. English, to 3s. and 4s. 6d. each, according to the goodness and the number of buyers. This therefore is an encouragement to the Baskirians, and other inhabitants, to hunt, and their method is, to trace the animal in the first fall of the snow, and when they meet with it, pursue it with their dogs, or bring it down from the trees by a gun or an arrow. In many of the brooks there is fine otter-hunting. Indeed there are so many of this animal, that they catch them with beam-traps, laying some fish or a crab for a bait. They kill also a great number of squirrels, whose skins are sold with other furs, to the Tartars, who travel among them for the purpose; but marten skins are by far the most valuable. They catch now and then a bad sable in the Uralian forests, but

but it is seldom. Elks and roes, are to be met with in the upper districts of the mountains, but there is scarce a wolf or fox to be found, on account of the thickness of the forests.

The only insect here worth notice, is the crane-fly, (*Tipula polygama*) and this for its extraordinary mode of copulation. About each female assemble ten, twenty, or more males, which lay entangled together with their legs. If one separates them, never less than two, but often three, or even four males, are found in close connexion with the female. These crane-flies fly but little, but they run about like spiders, and are a prey to the glow-worm, (*Cicindela hybrida, et Sylvatica.*)

On the 19th of May, I reached the Symskoi iron-mills, the situation of which is uncommonly beautiful, being a little plain betwixt two woody mountains. The works are erected on a branch of the river Sym, where salmon are caught six or seven feet long, and a fine sort of trout. On the water are two mills, six forges, and three hammer-mills, each mill working four hammers. Here is also an anchor-forge, and a furnace. The Sym is not navigable on account of its rapidity, of course they transport their iron some distance on sledges during the winter. They manufacture here from 50 to 60,000 puds of iron annually, each pud 36lb. English. The workmen are all slaves, but are paid a sufficient salary to live comfortably with their families. The work-

mens

mens houses are 160 ; a stone-built church stands on a vacant spot near them, and a good wooden mansion in which the minister lives, who has a country-house and a garden, the whole fortified with a breast-work of timber laid on each other, 2100 feet one way over, and 1050 feet the other.

In changing of horses at one of the villages, the Baskirians brought one of those which they said was of the breed of Schaitan Kudei, and would draw me well through any difficulty. On enquiring into the nature of this breed, they told me, that the first sire or father-stallion, married the daughter of a mountain spirit or devil (Schaitan) whom he met with in a cavern he made in an adjacent mountain, and that from this alliance this breed of horses sprang.

About forty-three miles further on, on the Uralian mountains is another iron-manufactory, established in 1757. The number of houses here are 470. The church and fine mansion of *Jacob Twerdischef*, who is principal director of all the numerous iron-manufactories erected by his relations in the district of Orenburg, are built only of wood, but the storehouses and forges are built with stone. The works here are all fortified, consist of a double furnace, four forges, fifteen hammers, and an anchor-forge ; besides these, there is a common forge, two furnaces to heat the bars, and a saw-mill. They melt here annually 200,000 puds of
raw

raw iron to supply the hammers. They fetch the ore thirty miles in the winter-time, and it yields fifty-six puds per hundred and more of raw iron: of this they manufacture here 80,000 puds in bars, and the rest is conveyed to the other manufactories I have mentioned. All these are conveyed together to a newly erected manufactory of three hammer-mills, and a saw-mill, with 120 houses on the river Jurjus, where in spring it is put on board vessels built on purpose, and carrying each 6000 puds.

‘ Dr. Pallas now proceeds to describe two or three caverns in the lime mountains of Ural, which he visited, and this he does with the knowledge and accuracy of a philosopher, but as they are not by far so wonderful and curious as our caverns in the peak of Derbyshire, which have been often described, I trust my readers will consent to pass them over.’

On the 20th of May, says our author, I arrived in the village of Nissebasch, upon a brook of the same name. Here are a people called Meistscheraks, who, as often as required, are obliged to do the same military duty with the Cossacks; these emigrated eight years since from a station on the river Ufa, into this district, and prosper exceedingly well, having a tract of fine, arable land, situated between the mountains about the river Jurjus. Having settled among some Baskirians, they pay them an annual rent of twenty-five copecks,

pecks, or 1s. English each family, for as much land as they can or will cultivate, besides pasture and wood. On the same footing are all other Tartarian villages that are established in the country of the Baskirians. The soil is here quite black and fertile to the utmost degree, and never needs manuring. These Mestfcheraks enclose their fields with hedges, and let their cattle run upon the lay fields. They turn up every new piece of ground with a Tartarian plough, but if the weather be dry, they put from four to six horses to it. In moist weather, and on all other occasions they use the Russian plough. In such new ground, the first year they sow hemp, and bear-barley. This barley produces ten or fifteen fold. Every ten or twelve years they leave a field and seek a new one. They carry on a considerable corn trade with the iron-manufactories, and breed a great many cattle and bees. The country here abounds with foxes and martens, and I saw a particular invention for catching woodcocks in winter, which deserves notice,

They stick forks here and there in the ground near trees in thin birch woods, where these birds mostly retreat, and upon these forks lay a cross pole, one end of which is tied to the tree, the other resting on the fork, to which they tie bunches of corn. At a little distance from this they make a funnel of birch-rods about five feet high, by sticking the rods in the ground as close to each other as the wires in a cage, leaving one end of the funnel open at the top, and about an ell in diameter.

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diameter. In the opening or mouth of this funnel, they fix a wheel, which moves round an axis, and consists of two hoops crossing each other, and wound round with straw and ears of corn. Now the birds fly first upon the cross pole, placed near the tree, and if they fly on the ears of corn fastened about the hoops of the wheel, they can settle no where but on the hoop, when the wheel immediately turns with them, and lets them fall into the funnel, from which they cannot escape.

Before I leave these Metscheraks, I must observe that the women differ in dress from the Tartars, with whom they have the same language, the same manners, and the same Mahomedan religion. I speak not of the men, for all the men in this country dress nearly alike. The reader I trust will form a better idea of their dress from the plate, than from any description I can give. I shall only remark, that the form of the cap, ornamented in front with silver coins, and beads of coral, is the same with that of the Ufian Tartars; the principal difference is in the veil which hangs down from the hind part of the head, and in the wide sleeves.

Having heard of a burning mountain in the adjoining district of the Mursalariskian Baskirians, I went twelve miles to see it. This mountain is situated on a bend of the river Jurjusen. It is a very steep one, and covered with wood, but on three of the highest

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Baring ...

parts, near a southern precipice, are several, bare, reddish spots, which spots are burning, and we drew near the place by a very dangerous path. Every thing here was flourishing, to which the burning of this mountain, and the heat it spreads around, must undoubtedly contribute.

On the eastern side which is now the burning side, the mountain seems to be 100 fathoms in perpendicular height. It has burnt on the eastern side only for the last three years, and that less violently than in the middle height, the whole southern side being burnt out; for the subterranean fires have existed about twelve years. A sensible Baskirian gave me the following cause of it. Eleven or twelve years since, a tall pine-tree that stood westward, quite at the bottom of the middle part of the mountain, was fired by lightning, which consumed the very roots of the tree, and thus penetrating the body of the mountain, it has since burnt inwardly, without interruption; yet so that the fire has ceased at the bottom, and yet is far from having reached the top. The whole southern side, now bare, he told me was once, like other parts, overgrown with trees and bushes, which have been consumed as far as the fire reached; namely, a space, of which the smallest diameter must be 70 fathoms, the greatest 100 and upwards. The fire also communicated to an adjacent spot on the western side, but is there extinguished, and the place is now overgrown with all sorts of plants, particularly
the

the fragrant dame's violet (*hesperis Siberica*) the lupin, after and wild liquorice (*astralagus*), The eastern part to which the fire passed three years ago, through a small part of the valley, then covered with birch-trees, is now quite green again, but yet burns with great violence, and exhibits almost as large fire-spots as the middle part of the mountain.

The stone of which this mountain consists, especially in those spots which are burnt out, is partly a reddish slate, and sonorous, yet seems to be a kind of lime-stone, and partly a soft, consumed stone, divided into thin, foliaceous layers, between which there appears to have been some other matter, now burnt to ashes. In the eastern part, where I ordered the men to dig, as deep as the heat would allow, I found the stone in coarse layers, but the deeper we went, the finer and looser it was. The layers seemed to incline from west to east, though in general I could find no determinate order, owing to the sinking of the ground in such consumed spots. In many places I met with a yellow ochre iron-stone, and at the bottom of the eastern part lies every where, between the stones, a light, red, friable marle. The burning spots are full of large clefts and crevices, so that it was dangerous to walk on them. In some places the men sunk into the soft, burnt ground up to the knees, and could scarce get out again, without feeling the fire. From the open clefts rises continually a burning, hot vapour, which no

one could put their hands near, and which on throwing birch-bark, or dried chips into it, they immediately caught fire. During stormy and gloomy nights, red, thin flames or fiery vapours, rise to some height, yet there is no sulphureous smell, or coal-like vapours; the exhalation which rises communicating, no other sensation than that suffocating heat, which issues from a hot glowing oven, after the embers have been cleared out. As deep as we dug, there was no smell, though we dug till the stones were hot enough to hiss with any moisture, and burn the wooden spades.

Not only on the outside, but within the burnt spots, the ground was cold, and the common orach was growing on the places. The bottom of the middle part of the mountain was covered with luxuriant herbage, which, as the Baskirians told me, was not the case, before it's burning. We saw a great number of adders about the place, which were here before it caught fire. The Baskirians assured me, that, during winter, no snow would lie on it, that the soil was always green, and had plants in flower through the whole winter.

On the opposite shore of the Jurjusen, is another curiosity. A little brook comes down a height adjacent to the river, and throws itself, after a course of sixty fathoms, with a steep fall into the river, and in that little space of sixty fathoms, turns four mills.

In

In passing over a woody mountain, I could not but take notice of the vast number of large and tall pine-trees and asps, either broke, leaning, or torn up by the roots by a hurricane, that had raged for five days together. The wool of the asp might be gathered here in great abundance, if the people were not so indolent; the branches might be lopt and carried to the houses, and when dry, the wool will shake off. It may be worth the attention of a speculator, whether asp-wool in the common way, would not be a good substitute for foreign cotton, and as it has a much better gloss, and is considerably finer than cotton, it deserves an attentive trial. I mentioned this to a learned friend, and he told me he had tried a similar experiment, with the wool of the willow (*Epilobium*) and it had succeeded beyond his expectations.

I next passed an extensive manufactory of iron, where they make bars, and cast vessels, belonging to a merchant, who employs 1800 men constantly, and 500 more occasionally. The ore they use here is at the distance only of twelve miles, and produces half it's weight in good raw iron, which does not lose a third part under the hammer. The bar-iron here manufactured, is so tough, that it will bear the hammer without heating, and they send away annually above 100,000 puds, in barges that carry 7000 puds each, to different sea-ports and places of the empire. Here I saw them catching vultures by means of fall-traps, fastening live

pidgeons as baits. These vultures are sent in great numbers to the Imperial court.

Travelling on, the chief of a neighbouring village came up to us with a large body of armed Baskirians, to serve as an escort, but we declined his polite offer, as unnecessary. On account of the troubles which arose this spring on the frontiers of the Kirguisians, every Baskirian had been ordered to be armed with lances, bows and arrows, for they are not allowed to carry any fire-arms. Those who inhabit the eastern part of the Ural and most of the provinces of Iserskaja, are much more substantial than any I have met with before. The excellent pasture in this district, gives them a fine opportunity to breed horses; and it is not rare to see some persons who possess from 2 to 4000 pieces of this land. In short, this step is so rich in wholesome and nourishing pasture-plants, that it is pity but such as sow artificial grasses, and make meadows, could get the seed from this part of the world. The *Esparcette*, and *Redysarum* of the Alps, besides innumerable species of trefoil, coddled plants, mugworts, and starworts, are universal here, and they will agree with every climate.

The natural indolence of the Baskirians prevents their providing any stock of hay for the winter, of course they turn out their horses on the step, and oblige them to search for their food, by scraping off the snow,
and

and if, as it often happens, a thaw should follow the first snow and cover the ground with ice, these poor creatures are almost without food, and become miserably lean; so that it is wonderful that under these circumstances, they should breed so fine horses as they do; especially when it is considered that they deprive the colts of great part of their nourishment, by milking the mares for kumys, and tying the colts all day to a stake.

In many parts of this province the Baskirians keep camels, but in small numbers, as these animals were taken off by a distemper that raged among the great cattle a few years since. The fact is, that the pasture of the country, and the severe winters, do not agree with the constitution of this animal. They breed also very fat sheep. Besides their wealth in cattle, they are great husbandmen; they sow nothing however but summer-corn, barley and oats, and seldom more than they want for their winter-provision, added to their smoked cheese or krut; for as their cattle yield but little milk at that time of the year, and they have no kumys, they would do very ill without krut. They assured me, in general, that if a person gets drunk with good mare's milk, kumys, he will not have the least appetite till the third day after; for this reason, they use it in summer, as their chief food.

The dress of the Baskirian women on this side of the Ural, has something more elegant in it than the customary dress of this nation. The habit is made of linen worked about the neck and wrists, the cap or *Tschaschbau* decorated with silver coins, and other parts of their dress are the same with that of other Baskirian women, but the broad ornament which hangs like an order on the shoulders, and consists partly of coins, partly of coral beads, and several little toys, I never observed among other Baskirian women. Here the women wear it from morning to night, and do all sorts of work with it, though it is inconvenient and much in their way. Indeed they do not like to be seen without it. They call this part of their heavy dress, *Dilbuga*, and men cover the reins of their horses with the same stuff; from which one cannot form a very favourable idea of the respect which the Baskirians pay to their ladies. Indeed it is but little.

I now passed over the east side of the Ural, which is very steep, and alternately cloathed with birch-trees and larches. We found here several streaks of ore, of which the mountain is rich, and most of the ores contain some mixture of noble metals.

At the bottom of the mountain is a village consisting of 100 houses, inhabited by Baskirians, and sent here

here to form a colony. They are substantial husbandmen, and sow all sorts of corn, except buck-wheat: the environs of this place exhibit many mineral curiosities, which, though not very considerable, deserve notice. On some spots on the borders of the lake have been found some fine yellow topazes. Round the village one finds every where, on digging, an ochreous and shining stone, containing a small alloy of gold. North-eastward of the village is a height of bare rocks, thinly overspread with wood. The rock is in a soft state, and full of gold and silvery brilliancy, the layers of which run almost east and west. On the report of some Baskirians, people were set here to work, and a soft vitrifiable matter overspread with large purple-brown, irregular granates, and some other black mineral have been found.--The latter produced a gold alloy of five 8ths of a Solotnik, or dram, *per* 100 puds of ore. A little further westward, lies a black iron-stone, and at the distance of two miles, in a low, marshy and salt district; underneath the ground is dug a very white, though coarse, earth, samples of which have been sent to the Imperial China-manufactory.

On the first of June I set off from the Sawod, in pursuit of an allum-rock I had heard of, and crossed a little brook in a ferry, which, though very narrow and shallow, is so rapid, that we were carried a great way down: we should have passed it without a boat, but our horses could not keep their feet, and when we got
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on the other side, they carried us over a step, but were too weary to climb a mountain beyond it, and it growing dark, we were obliged to put up with a very bad night's lodging. We chose the upper rocks of the height we were in, as the driest spot of the whole district. We thought to have made a fire, but, by ill luck, had not materials to strike a light. Vainly did we try to produce fire by rubbing two pieces of wood together; of course we were obliged to be contented with a dry spot without fire, and by means of our cloaths, and branches of trees, we formed a Baskirian, travelling tent; underneath this we stretched ourselves on our saddle-felts, and though this bed was very wet, the rain having penetrated through it, yet we slept perfectly found till the next morning.

At dawn we rose briskly from our rest, and breakfasted on a glass of water from an adjacent brook, which would have been an excellent relish, if we had had a fire to dry and warm ourselves; we therefore hoped to do it by quick riding, but even that could not be done, owing to the steep and stony ways, and the felled trees that lay in our way. At last we reached the alum-mountain, which was beautifully decorated with linden-trees, and all sorts of fine plants, especially three different species of lady's slipper. 'To follow *Pallas*, in the description of this mountain, would answer no good purpose.'

From

From this allum-mountain, we went to another, where is an isinglass pit. It lies on an elevated, rocky tract, consisting of a reddish or white, dry, and very brittle quartz, singularly ornamented with isinglass, and covered with a glittering sand, mixed with a red loam. In this very quartz we found the isinglass in nests, in various positions, forms and layers, commonly very impure, and of moderate transparency, about a yard in length. The pit is in sundry places fourteen feet deep, and the works are carried on at the expence, and for the profit, of the magistrates at Ufa.

From this place I turned back to take a view of the china-earth manufactory, erected since the year 1752, where the porcelain earth is washed and cleaned, and from thence carried to Petersburg, to be made into china. This manufactory is surrounded with a wall of timber, and has two cleansing-houses, a house for drying the china, one for the master, ten dwellings for his eighteen apprentices, and a necessary store-house to deposit the unwashed earth. A description of this must be agreeable to every reader. To wash this earth, which is dug about six miles off, and brought here, they have a number of vessels, each about seven feet deep. The raw earth is first put into the large tubs with water, to soak, divide, and dissolve; here it is left seven or eight hours, that all coarse and sandy parts may be separated from it, which is sooner done
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if the weather is fine and serene, than when it is gloomy. After this, the earth is poured into other tubs, through fine hair-sieves, where it is to settle again, and there the thin matter is strained through safety sieves, into the deep tubs, in which the pure, white china-earth settles by degrees at the bottom, and the water is drawn from it by tap-holes, which are made at different heights in the tubs, till there remains a fine sandy sediment; this sediment is afterwards passed through three tubs, standing upon each other; it is first poured into the upper one, and the earth there settling, the watery part that remains, is let into the one next under it; here it settles again, and lastly into the lower tub. This is done that all the fine sand may be deposed from the water. This sandy sediment is next brought into a hot-house, and spread over a sail-cloth, fastened upon several cords on frames, in order that all the water may run out, and when the white, porcelain earth is become solid, it is made into large tiles of about twelve pounds weight each. Of fifty puds of raw earth, they make about eight and a half of pure china-earth, and they prepare here, monthly, between three and four puds. Every winter the prepared earth is sent to the regency of the province of Isetskaja, from thence to the mine-office of the iron-manufactory of Blagodat Kuschwinskoi, and from that place transported with the iron barges of the Imperial manufactories, on the rivers Kama and Wolga, to the cabinet at Petersburg.

The

The china-earth of this district, known by the name of the earth of Ifetskaja, is of a beautiful white, and possesses every requisite quality to make fine porcelain.

My road led me along the borders of the river Mias, where we saw great numbers of bustards, and beautiful red ducks feeding, which build their nests in holes under ground. The latter bird quits this climate in July, as soon as it's young ones are grown up, and returns in spring with the first birds of passage.

I staid some days in the fort Tschiljabiniskaja, which is the most capital place in all the province of Ifetskaja, in order to secure my waggons and baggage in this place, which I designed for my winter-quarters, at the close of this season. I shall therefore give a description of it at the end of the year.

Having left this fort, I went to visit the mines belonging to Catherineburg, and began by the most southern ones, directing my way to two silver-mines lately discovered in the province of Ifetskaja. Having heard that one called Senarskoi, whose works had been discontinued for four years past, was opened afresh, by a person deputed by the supreme office of miners at Catherineburg, I went to it over Etkulskaja Krepost. This step is covered with trees, and bears the finest pasture, containing grasses only proper to
Siberia.

Siberia. The whole step of Isetskaja is full, in June and July, of large, yellow flies, different from the common ones, only in being twice as large, and of a pale yellow colour. They covered almost all our horses, and in the neighbourhood of pools and lakes, the air is filled with them, especially in sultry weather, or when tempestuous clouds trouble the sky. About six miles to the westward from the abovementioned fort, lie two lakes, called by the Russians *Gorkje* (bitter lakes) on account of the bitterness of their waters, which formerly are said to have been sweet. Both lakes have reedy borders, in which we met with a great many curious ducks, not seen in any other inland waters of Russia. Among them I remarked some quite black, called *turpani*, of which there are numbers here, and a very little, brown duck, with a light-brown bill, that swims with it's hind parts entirely under water. These are very good divers, idle flyers, and very bad walkers. This latter bird, called from its voice, *Sawki*, is nowhere described; I have therefore given a representation of a young one and an old one, (*anas merfa*). See the plate, and also the description at the end of this volume.

I continued my journey along the line of intrenchment, from fort to fort, up the river Uwelka, and passed several Cossack villages, where the inhabitants are substantial farmers. At one of these I was told that the Kirguisians had, on the 8th instant (June) made an attack on one of the forts, only 45 miles distant from

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from this place, and had put every body into fear, and that of course all had put themselves into a state of defence, and kept a continual look-out. I was even told that these troubles had driven all the officers from the mine of Sanarskoi, and that, two days past, all the workmen had been dismissed. Being so near, this did not interrupt my going; but the people representing my journey as very dangerous, I took with me a little escort of armed peasants, and sent to the fort of Sanarskoi, for a detachment of Cossacks, to wait my coming at the mine; yet I afterwards found that all my prudence was unnecessary, and that I might have done very well without any escort.

The heat on the 12th of June was almost insupportable, and De L'isle's thermometer rose in the afternoon from 110 to 105. The first cause of the discovery of this mine, was some pieces of a massive verdigrease, which were found here by a Tartar, who shewed the spot to a custom-house director, in 1761, whose zeal induces him to find out all sorts of useful minerals in the province of Isetskaja. He began that very year to dig upon the spot, and made a regular mine-opening; and as soon as they came to a certain depth, they found whole masses of lead; whereupon the proprietor made a report to the supreme mine-office at Catherineburgh, and solicited for a privilege to continue the works, engaging to send all the ores which had any alloy of silver, to the manufactories belonging
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to the crown. Further I know not. The mine-office, that year, deputed some officers from Catherineburgh, and the mine was worked till the year 1765, at the expence of government, when the death of the director, and other unknown reasons, caused an entire suspension, and nothing since has been done. The miners sent here, stopped only a few days, and did but very little; of course, I could see but little, but shall communicate all I was able to gather respecting the qualities of the ores.

On the whole, it appears that this is merely a clay mountain, in which the ore lies, sparingly scattered in thin layers, and therefore no constant ore is to be here sought as in the mountains higher up the river Oi. In this mine they have made but three shafts and a water-gang which runs to the depth of several fathoms. As the mountain is quite loamy and soft, to dig it was easy, but timbering it was more necessary, and of course more expensive, for the men could not go on a step without it. In the hard iron-stones there is a gold-coloured brightness, and whole streaks of a beautiful verdigris, also masses of solid copper. In the blue loam here dug, they wash out massive veins of copper ore, sometimes a fine glittering lead, and silver streaks, which amount to a tenth part of the earth. Though the whole shewed no great alloy, yet they found a sufficient quantity of ores, to make it pay for working. Springs, indeed, prevented their digging very deep, as they could

could not be sufficiently turned off with engines, but the water that was taken out from the mines served to wash the ore.

From the alloy of the ore we dug here, the following is a specification. The coarse, glittering lead with some verdigrease, produced 56lb. of lead per cwt. one pound of copper, and one ounce and a half of grains of silver; the fine, glittering lead 61lb. of lead, and one and three eighths of an ounce of silver; the best copper-ore yielded 23lb. of copper, and four fifths of an ounce of silver, in eight pounds of lead. The small ore yielded but from two to four pounds of lead, the eighth part of an ounce of silver, and six pounds of copper, per cwt.

The other silver mine, called Kuckuscha, is situated at Kukushefskoi, upon a height that makes part of the mountain Akembet-tau, which is rich with ores, gently rising, and without much wood, and runs along the Ui. The mine lies about two miles and a half south-east from the river, and makes part of the Uralian mountains. The ores were discovered here about ten years ago, by a Baskirian Sotnik, who revealed them to the late possessor of the iron and copper-manufactories at Kosodurskaja, who during all this time continued the works, and ordered all ore to be mixed and melted together. But another Baskirian took the ores of silver alloy into consideration, and upon his

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report, the supreme mine-office sent two deputies, who are empowered to keep all silver-ore for the use of the crown, and they pay a certain sum to the proprietors, to pay the miners. As the water was very high in the gangs, I could not enter the mine, but had an opportunity afterwards of inspecting them properly. Between two shafts is an open pit, in which the works were first begun, and through which the miners go in and out. The business is done by horses, and some little dwellings are erected here and there for the master and the workmen. The biggest shaft was near seventeen fathoms deep, but since they have improved the works, they have penetrated (in January, 1771) to a depth of twenty fathoms, and there found the ore richer in silver, and purer in copper. The ore is dug in a shaft that runs very regular from east to west, and it's length above thirty-three fathoms. The streak is sometimes eight or ten feet strong, and consists of a white and fat quartz, lying in a grey chert, and cannot be got out, but by blowing it up with gun-powder. In the middle of the metalick streak, the ore chiefly consists of a beautiful lazuli and verdigris, and in these ores we find a blackish, glimmering, silver-ore, overshot here and there with a copper-colour, which upon trial yields from ten to twenty-four pounds of copper, and one of quartz, to one ounce and a half of silver, per cwt. consequently 100 puds of the better sort yield almost two pounds of silver. There is also among this ore another brown substance, which may be supposed

posed to contain gold. During the latter months of this year, by constantly working, they collected from seventy, eighty, to 100 puds of the silver ore, and the pud might be valued on the spot, at from eight to ten copecs, each copec one halfpenny English.

There is little doubt, but this mountain might become more productive, if it was opened with a search-shaft, which certainly would lead to some fertile discovery, but as the matter depends only on the present proprietor, who seeks his own interest in procuring a sufficient quantity of copper, of which there is no want, and at a little expence, he has not spirit enough to go further, unless he could see his advantage in so doing. It is therefore the business of government to take it in hand, and that 'tis their interest, is past a doubt, for, according to the opinion of a mine-officer, the whole, adjacent mountain, is full of silver-ore; and many other places within a little distance.

On the 15th of June I continued my journey towards Catherineburg. The usual way to that place, chosen by the copper and money-caravans from the manufactories at Orenberg, go first to the village Karassy, but I went a mile out of my road to see the pits from which they prepare the porcelain earth of Tschabar-kulskaja. Since the establishment of the china-earth manufactory, I have already mentioned, which is now about seventeen years, they have fetched the earth

from this district, which is found an ell deep under the salt, black mire that covers the surface. They find sometimes spots quite pure, yet full of yellowish veins, but cleansing it with their hands, and little, wooden spades, the remainder goes off in the washing. The white parts lie about in an ochereous, yellow and soft clay. Both the white and yellow earth when dug, look as if composed of little scales and folia, and when touched are very soapy, yet do not ferment with acids.

Each apprentice is expected to dig every day, in summer, ten puds of pure, white earth, which cannot always be done. They begin digging in the middle of June, as in these soils, adjacent to the mountain, the ground is often frozen an ell deep till towards the end of June.

In our way to the village where we meant to sleep, we had to cross the river Mias. There was no bridge over it, but as the river is commonly very shallow, our design was to ford it. However, when we came to it, we found it impassible; for the storms and showers had increased it so much, that it had transgressed its banks, was rapid, and near ten feet deep. Our business then was to make a float, and a Baskirian hut which stood near the river, answered our purpose; the float was made, and we got over. When we came to the village, the Baskirians had left it, had retired, with their flocks, into

into the cool mountains, and had locked their doors; but as a lock was no bar to us, we soon had possession of a house or two, and settled ourselves at pleasure. Near each house, was a little, round oven, built with brick, with horizontal pipes, communicating with the oven at one end, and a hollowed pine tree, or cylinder, about seven feet long, set up on end. This is a contrivance to smoke sheep and colt-skins. They hang a skin up across a pole, on this cylinder, and then, by heating the oven with pine-apples, and foul-wood, the smoke issues through the pipes into the cylinder, and smokes the skins; done prior to tanning them, in order to make them impenetrable by rain, and give them a fine yellow colour, on the inside.

Travelling on, we came to the enormous lake Uweldi in Baskir-Ujalde-Kuly. According to the general and unanimous calculation of the people, who inhabit these districts, this lake, in circumference, is between thirty-five and forty-five miles, its length fifteen miles, and its breadth nine miles, and they reckon seventy-seven islands on it, nine of them having lofty woods.

Here are two other iron-manufactories in our way, supplied with workmen who are obliged to work here for not paying the poll-tax to the crown of Russia; the proprietors of the manufactories pay that tax for them, and have their labour. Four thousand, six hundred and thirty-eight men are employed in these two ma-

nufactories, and they make, annually, 15,200,000 puds of bar-iron, which, in winter, is conveyed by the Ural to the river Ufa, and from thence transported at high-water, in twenty or more flat vessels, to the Wolga.

The district in which these manufactories stand, being, on account of the woody mountains, many lakes, bogs and springs, cold and wet, it is exceedingly unhealthy, entirely unfit for agriculture, and seldom a year passes but they have a distemper among their cattle and sheep, terminating by an internal inflammation. Against this disorder, they fumigate with the gum of the larch, and with success. Every larch, by wounding it's bark, will ooze out a clear resin, tough and yellowish, which, if fresh, possesses all the virtues of Venetian turpentine, and might be gathered for the apothecaries in all the mountainous parts of Siberia. This resin fills so much of the bark, and the young wood of the larch-tree, and renders it so combustible, that there is scarce a young larch-tree to be found here, which has not received some hurt by fire, either by the burning of grass, or some other accident; and in such trees, the gum has a brown colour, dissolves in water, is very like gum-arabick, and is known in Russia by the name of Orenburg gum. The country-people gather no more of it than they want for their own use, and assured me they made use of it as an emetic in cold fevers, and as an astringent, in long and obstinate cases of the *fluor albus*.

Sisertskoi.

Sifertskoi. On the 19th of June I reached the manufactory of Sifertskoi, erected in the year 1733, on account of several, rich iron-ores discovered in the neighbourhood and then called *Imperatrizi Anni Sawoda*. Here are an anchor-forge, where bar-hammers, and all large manufacturing tools are made, a saw-mill, two new hammer-mills, containing five bar-hammers, and one steel forge; another with three hammers, two plate-furnaces, one for copper, the other for iron, and a high furnace which contains a foundery, and covered with an iron roof. Also a copper-mill, with two furnaces, and a bar-hammer, and two other furnaces for iron and steel; a well-built ballance-office, and several warehouses for smiths. Here is also a fine free-stone mansion-house for the proprietor, an orangery, parterres, and flower-gardens, and the house elegantly furnished. Besides these places, there is also a work-shop where the neatest joiner's work is made, not inferior to any made in England, and a manufactory where several sorts of artists work in rooms allotted to them. One for drawing, in which designs, plans and models are made; one for locksmiths, and coarse workmanships in copper and steel. For steel they use here *crocus martis*, and though they have no polishing frame, yet the workmanship seems almost to excel the English. There is also another place for grinding and polishing-stone, and two others, for fine engravings, and other delicate workmanship, in coloured metals, brass, silver and gold,

The proprietor of these works has also a stud, in which there are eight, select old, and five young stallions, and the tame and governable behaviour of these animals, which are elsewhere quite wild and untamed, is surprizing. Opposite the stalls is a bathing-room to wash the stallions in winter. Among his horses is one remarkable for his elegant whiskers, which rise on the upper lip, just underneath the nostrils, and is a fine mark of nature. He has also a menagerie, a collection of animals, containing fifteen of those tall stags, called in the country *marali*, and caught in the upper district of the river Irtysh, some elks, roes, and camels which breed here, besides a great variety of wild-fowls. I must lastly mention his herd of select bulls, which are kept for work, and though of Kirguisian race, are, notwithstanding, remarkable for their size, strength, and beauty.

The place consists of near 300 dwellings, and a church, surrounded with a fortification of wood. The proprietor is allowed 300 peasants for felling of wood, and burning of coal for the mines. The iron annually brought here is 1,000,000 puds, very good and solid, and may be cast, raw as it is; it yields one-half pure iron, and is dug close by. The bar-iron manufactured here is conveyed in winter along Tschukfowaja, to the warehouse established about seventy-five miles from hence, and there shipped in barges, and conveyed down the rivers Kama and Wolga. Notwithstanding
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the antiquity of this manufactory, the woods round it are in a very good state, and it seems as if the moist districts, north of this place, along the mountains, were selected by nature for the production of resin-wood.

The first establisher of this extensive manufactory, was Lieutenant-General *De Henning*, who was, at that time, chief president of the supreme mine-office, at Catherineburg, and has been since one of the most considerable manufacturers for the state, till the year 1759, when the trade seemed to diminish and was given up by him to the present proprietor, Mr. *Turtfchaninof*, for the moderate sum of 200,000 rubles, with all the iron-pits and mines belonging thereto, and a considerable district of wood, besides the masters and workmen.

On the 20th of June, I made a little excursion to an asbestos mountain, situated in a straight line, about eleven miles from this manufactory, though the summer-road, which I travelled, was near twenty-three miles. It was discovered by accident, about five years since. The asbestos, found here, is a genuine plume-asbestos and lies together in lumps of three, four, or more puds, (each pud thirty-six pounds), consisting of fibrous cones, exceeding three feet in length. The plume-asbestos, is a white-grey, very heavy and sometimes has the interstices of it's fibrous cones filled with a yellow earth, or earth of a lucid green. In the air, it becomes

becomes very soft and almost like hemp, and in the pit, as if rotten. I found some pieces quite yellow, and soft as rotten wood. That which is exposed to the air, a day or two, is soft and fine enough to make paper with; and I speak it from experience, having tried it.

On the 22d of June, I visited the famous, old and rich copper-mine, Gumeschetskoi, which might justly be reckoned as the most important and remarkable of all private mines in Siberia, had it not been surpassed by the immense richness of some new ones discovered in the mountain Werchoburtskoi, of which I shall give my readers a description; yet, on account of the number of works here carried on and it's fine ores, it is the best worth seeing.

It being impossible to give a circumstantial detail of the innumerable works which extend to a depth of twenty-five fathoms under-ground, and consist of shafts, stream-works and different branches and tracts, I shall describe only the general situation and quality of the mountain, the different sorts of ores dug here and the chief works of the mine; and I shall be the more particular, as few of my readers, I presume, are acquainted with the contents of a gold-mine. This mine, then, is situated three miles from the iron-manufactory of Polestkoi, which is a similar one to that I have mentioned above. The ore lies, generally, in a clay or loam,

loam, which, being very soft, is attended with little trouble and expence in digging. The different kinds of loam here met with are, a yellow, white-grey, one penetrated with vermilion, a brown earth, and, on some spots, a snow-white loam, much like pure, porcelain earth. It has been also observed, that there runs through the middle of the one containing loam, a small mountain of the most excellent, snow-white and beautifully half-transparent marble, very fit for polishing, and running, according to the miners' language, from noon to midnight. This mountain will produce excellent marble for ornamental architecture and is the more valuable, as none equal to it has yet been discovered in Russia. Excellent ores are here found and dug up in large masses, either in soft or hardened loams. On the right-side of the mountain, they dig only copper-ore, but on the left, chiefly a heavy and rich, vitreous, steel-stone, mixed with green and other copper substances, which render it unfit for any thing. The glassy substance, which composes most part of the iron-ore, is talcous and it's clefts full of a tin-coloured, soft blinde and often overshot with verdigrease. They never dig this iron-stone, except when it lies in the way and it is necessary to remove it.

The marks they follow are, first, the cinnabar seen in the loam, next, a brown-black, copper sort of earth, found in form of kidneys or eyes, very similar to garden-earth, and which appears sometimes solid, like
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black chalk, and sometimes smooth, like white lead, and, lastly, the loam's appearing of a green colour. The above-mentioned vermilion, which is mixed in the greatest abundance with the white-grey loam, makes it look like red marble, and contains so much copper, that when the tools, used in it, are brought to the forge for repair, it is impossible to harden them properly, on account of the copper substance which adheres to the iron, until the hearth has been swept and entirely cleaned. If this vermilion is looked at with a candle or light in the mine, one may see on it reddish spots and intermixed, massive copper-dust.

The most common and finest ore found in the mine of Gumescheffskoi, besides this coppery clay, is a solid malachites of two different sorts like verdigrease: one is crusty and, though but moderately hard, is susceptible of an excellent polish, exhibits a most beautiful deep green and turcois-like stripes, wanting nothing but more solidity. This green crust forms itself very often about a grain of ochre and the clefts of large solid pieces often include a natural, chrystaline verdigrease. The other sort is plummy and like plume-allum externally, tenderly rayed, of a deeper colour, heavier and richer than the former, and velvet-like on it's natural surface and, in digging, wears the appearance of satin. Both are found together in lumps, like large and small kidneys, often weighing above eighteen pounds and taking on various forms. In the green crust, we may
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often observe a sparry, stalactical structure and the spars are, commonly, bored through longways, in the middle. Between the crust and the white, overshot surface of this species, one sees black dendrities, like figures of uncommon beauty.

Besides this incomparable ore, which renders the mine more noble, one meets, often, with a loam-ore of a paler green, having the appearance and solidity of lime-stone; also, some quartz-like nests, containing ores. Here, they dig a very curious violet, black, or granite-coloured, rich, copper-glass, shooting in short, quadrangular pyramids, partly spread upon the quartz-like stone, or found in the clefts, and is one of the purest ores of the mine. On the red and hardened loam, is a beautiful, violet and reddish sediment of lazuli, sometimes accompanied with plummy, copper-knots or massive tracts of copper. Once they found a pure and soft copper, resembling a web and formed in flat, thin threads, like plume-moss. Fine, massive copper-veins, are not uncommon, as I have remarked, in the loam, but, to my knowledge, they never found any large lumps.

It now remains to speak of the works. The space hitherto worked out, from the northermost to the southermost shaft, is about 150 fathoms. Within this tract, they have thirty-one shafts, to the depth of from sixteen to twenty-five fathoms. As this mine is much troubled

troubled with water, there are always eight engines going, worked by horses, for drawing it off. These machines are of a peculiar construction and cannot be kept a moment out of motion, or the deepest works would be drowned in a minute's time, and, for this purpose, they keep 400 horses, six to each machine, relieved eight times every twenty-four hours. The stream-work, from the middle of the works, runs from the depth of nine fathoms to that of 350 fathoms, and above is thoroughly timbered, and every year repaired. Through this stream-work, a timbered canal of about fifty fathoms long, carries off the water. There are here many shafts and pits filled up, and it seems probable, that they are the remains of the ancient works: for this very rich mountain has been worked by that nation unknown to us, whose industry and knowledge in mineralogy, I have had occasion to mention before; and the southern parts of the Ural are an evident proof of the same. The proprietor has a glove and a ragged, leather knapsack in his possession, which was found last month in this mine, between white stones at the depth of nine fathoms. Both consist of rein-deers skin. The glove is so made of the head of that animal, that the ears serve as a reception for the thumb, but both ends are open, so that the glove may be put on the right or left-hand. Notwithstanding the humid situation, this glove has preserved it's natural hair; but the knapsack, which is above two feet long and one broad, has suffered more from the ground.

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In this mine 200 men are constantly employed, and, besides these, there is employ for 150 others, such as overseers, smiths, harness-makers, stable-men, and carters, who bring here hay, grass, and timber, for they use here annually 5500 pine-beams. Besides this, they employ, in winter, above 100 peasants, who are obliged to work for their poll-tax.

Not far from this mine, are two quarries of marble, which have been opened a few years since, and from which the most beautiful columns and pedestals are made to embellish the imperial palaces.

A few miles from these quarries, are some old mine-shafts, running deep into a mountain, from which there was formerly dug some gold-alloy; but as it did not yield sufficiently, when other mines were discovered, this was deserted. But adjoining a fortified village, in the neighbourhood called Gornoi Stschit, upon the river Uktus, where was an iron-mill, and next to Catherineburgh, the oldest belonging to the crown, but now neglected to give the young timber, in the vicinage, time to grow, is erected some buildings for washing of the gold-ores, brought from Beresofskoi, consisting of two stamping-mills, and contrivances to separate the gold from the earth with which it is dug. In these places the workmen, are watched and guarded, that they may not purloin any of the gold sediment. With this sediment, after frequent washings, there is a mixture

mixture of silver and iron; the iron-dust is taken from it by loadstones, but the silver and gold are sent to Petersburg together, and there separated. They prepare here, annually, upwards of 70 lb. of gold from the best ore.

Catherineburgh, June 23, 1770. I arrived at Catherineburgh on the 23d of June, towards night. This is a fine city, the residence of a supreme mine-office, belonging to the mines in Siberia and the districts of Orenburg, Casan, &c. I shall not enter into any description of this place, it having been accurately and faithfully set forth by Mr. *Gmelin*, in his travels through Siberia; nor shall I say any thing of the manufactories there established for the benefit of the state; I will only observe, that the place has been since embellished with many fine, private buildings, a church elegantly built of stone, that a copper-mint, which was then suspended, is now at work again, and, that the iron-works of Werch-Jsetskaja, which formerly belonged to Catherineburgh, are now in the possession of Count *Woronzof*. I will proceed then to give a description of the gold-mines, at a little distance from the city, which I inspected on the 25th and 26th.

In my way there, I passed another manufactory for washing of the gold, which consists of two stamp-mills and other conveniencies. Here are employed thirty-five men, who prepare, every year, 90 lb. of virgin-gold.

gold. This place is near six miles from the mines, but they are obliged to submit to this inconvenience, there not being water any nearer. There are two other washing-places, besides these, but not much nearer to the mines.

Gold-Mines. The mines of Pyschma are, by far, the oldest of any gold-mines in this district, and were discovered in the year 1745. The first of these has eight shafts, but as the ore became wanting, without any farther hope, it was deserted in 1765. A second was then begun, but as the ore here is inconstant, they seldom work in it, except when the miners can be spared from other mines. There is a third here, which has now five shafts and is very productive. Besides these there are two other considerable works, which are not much attended to, owing to the inconstancy of the ore; but it is not so with the mine Kljutkhefsko, which was opened in 1763, with one shaft, and has been increased with five others. The works run here very deep and are very much exposed to water. This mine is very rich in gold-streaks, one of which is computed to run upwards of sixty fathoms, and it's side-gangs, or shafts, from twenty to thirty fathoms long.

Under the name of the mines of Beresofkoi, is understood those four mines situated in the neighbourhood of the brook and manufactory of the same name, and now in work since 1752. That which promises best

has thirteen shafts, the second has ten shafts, the third has six and the fourth, four. All these mines are most actively worked and with the greatest order and regularity. The shafts, stream-works and side-shafts are very spacious, clean and well-timbered.

The general situation and condition of the gold ores found here, are as follow. The metallick streaks of the mountains are full of little, standing veins, which run from noon to morning and fall into the depth in different angles, from sixty to eight degrees, from midnight towards noon. It is not uncommon to find streaks which form a cross, but most of them are direct. These streaks which consist of a thick quartz with clefts, are very disproportionate in length and strength. Some are scarce an inch, when others are more than two yards in thickness. It has been remarked, that a streak, narrow in the beginning, increases further on, but those which begin large, diminish soon after. They are, commonly, from eight to ten fathoms long, except in the mine of Kljutschefskoi, where they are much superior and extensive, and the principal streak found in the engine-shaft, runs from sixty to seventy fathoms through the mountain, and is found equally constant in depth. The little streaks are, usually, during the first fathom, the richest, and at seven, eight and ten fathoms, are always poorer in depth, though they run much deeper. Such an observation appears rather extraordinary. Where the streaks end,
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it is in small filaments. It is generally observed, that the ores lie in a white or a white-yellow grey, mild, somewhat fibrous, and glimmering loam, running from midnight to noon, from five to ten fathoms broad, and their length often extending to 200 fathoms into the mountain. This loam separates readily from the veins, but sometimes the streaks are environed with a grey-red, spotted chert, which causes a great deal of trouble to separate them, and cannot be broke other, wise than by gun-powder. In this chert or loam, the streaks are sometimes scarce half an ell, sometimes three or four ells and sometimes four or five fathoms distant from each other. On all sides in the depth, the streaks are bounded by a beautiful, minium-like, white and spotted, dry clay, which is here called the robber of ores. This clay yields a good, red colour, but when they come to it, no farther trace of the ore is to be hoped for; yet, there are some exceptions: for, in the mines of Beresofkoi, the ores are usually found in the above-mentioned chert, and it is attended with much trouble to knock them off. In the large streak of the mine Kljutschefskoi, which I have mentioned, a reddish, sandy and variegated stone-loam is the distinctive mark of the ores, and in the same mine, the gold-ore, in another shaft, lies in sand-layers, mixed with quartz fossils, but the fossils themselves shew not the least alloy of gold.

I will now describe the gold-ores and other curiosities dug therewith. The most common ore in all the mines, consists in a dark or blackish brown, solid iron-stone, a spongy species, full of curious cubes, like dice, of which I shall give a further description, accompanied with, a fine, brown-yellow, rich ochre, wonderfully mixed and confused with quartz. In this brown matter and the ochre which accompanies it, the gold is interspersed like a fine dust. Even those ores, wherein the gold-dust is so small as scarcely to be distinguished with a magnifying glass, are not without gold-alloy, and with such gold, the washing houses or lavatories are chiefly supplied. The gold-alloy of the streaks is not always uniform, but the richest ore breaks in nests, though there is no visible change in the appearance and condition of the streak. There are also found in these streaks, some very curious gold-ores of a particular species; among these, that which they call pumice-ore, deserves a description, as it often occurs. This is dug in large and small cakes, or masses, in the midst of the gold-streaks, from which it is separated by its yellow-brown, sandy rind. The internal parts of these cakes resemble, at first, fine, spongy, white bread or pumice-stone, or, more properly, the tender, foliaceous texture of spongy bones, and is uncommonly light; for the matter consists of the purest and most tender folia, which cross each other and form little cavities, sometimes larger, sometimes smaller, and which, like pumice, will often float in water.

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The colour of this substance is white or yellowish, here and there overshot with brown; and, sometimes, it is found as grey as pumice-stone and of the same thick texture, and this is the richest sort. Within the cells of this ore, the foliaceous substance of which seems to be of a quartz-like nature, a great deal of gold-dust, as if powdered, lies so loose, that if the stone was broke it might be shaken out. Of all gold-ores this is, in proportion to it's weight, the richest, and the gold-dust may be plainly seen in it and washed out without any other trouble, and thirty-six pounds of this ore will yield from two to six drachms of pure gold-dust. It is to be lamented, that it is not found very abundantly in lumps or nests. Among the same ore, I found some consisting of a coarse texture, here and there flowing together in genuine quartz and exactly resembling worm-eaten quartz; and, among the spungy substances, some pieces contain, instead of gold, small particles of blinde or mock-lead,

But the common, brown, blackish ore is, in some places, of a very similar, light, spungy texture, and it's spungy parts over-run with lead-colour, but, nevertheless, of gold-alloy. This ore breaks away in small, regular, cubic pieces, like dice, of a spungy substance, a rust-brown colour internally, but, hard and shining on the surface, and each of their six sides is slightly furrowed with parallel lines; but so that the sides in contact have their lines always athwart or across each other,

whereas, the lines of the opposite sides lie in a similar position. These dice break away readily from the ore, and are found from one quarter of an inch and less, to two, but seldom three inches large. I saw some, the rind of which, or even part of the whole dice, resembled a water-pebble. Sometimes streaks of gold-ore are observable on their surface and gold-dust in their substance.

Besides these quartz-substances, there is found, in the gold-streaks, topazes of various goodness and value, either single or in clusters. They are, sometimes, several inches thick in hexagonal crystals, (the points of which are obliquely clipped,) which are either transparent as water, smoke-coloured and more or less dark. In the engine-shaft of the mine of Kljutschefskoi, there is said to lie an enormous mass of topazes, which could not be got at on account of the water, but I saw some considerable sherds knocked off with breakers, which appeared very clear and beautiful. They sometimes dig, in the gold-streaks, plenty of water-pebbles, lying in quartz and, sometimes, forming dice, and also a tin-coloured, radiant, quartz-like substance.

Besides the gold-streaks there are, in the mines of Beresofkoi, some copper, lead and silver-streaks, which, though divided from the gold-ore, run quite close to it. They also dig, in these mines, a number of water-pebbles, overshot with an excellent, dark-blue lazuli,

lazuli, and also a remarkable lead-spar, which never has been found in any other mine of this or any other country, and of which the ingenious and learned Mr. *Lekmann*, has written a treatise. This spar is heavy, demi-transparent, sometimes vari-coloured, sometimes of a cinnabar-red, and found in great, small, short and long chrystals, in the clefts of quartz and also in the sand, stony matrixes, and in places where the space would allow it, in a flat, cubic, prismatic figure, with unequal truncated, two-sided ends. Sometimes it is found on quartz, in short, oblique and irregular pyramids, like little rubies. If bruised, it makes a fine, high-yellow fermentation, that may be used in miniature painting. After all the experiments made in the physical laboratory, at Catherineburg, they have extracted from it a rich alloy of lead, amounting to half the substance and a very small quantity of silver.

There is also found in these mixt quartz-streaks, wherein this rare mineral is brought forth, some little oblong chrystals, pointed at both ends, of a sulphur-yellow colour, resembling massive sulphur and taken as such by the miners, but it will not burn in fire nor burst in flame, like the red lead-spar. This little chrystalization is found both upon quartz and sandstone.

In all these mines they employ 500 miners, which are scarce sufficient in winter, when the works are mostly

going. Many more hands are required for selecting and separating the ores, which is done not in the mine, but above, with hammers, and in this work some thousands of peasants are employed, who work for their poll-tax and, according to their age and capacity, earn from three to six copecks a day. These cannot complain against their master's oppressive conduct, a great number perish by the scurvy and most return home sick and heart-broken. They are only employed when they have no husbandry to engage them, of course, assistance is most wanted in summer-time, when there is most work to do. The ore, which is separated, as much as possible, from the substance it is connected with, is divided into three sorts and sent to the stamp-mills, where it produces from forty pounds to half a pound of pure gold-dust, in every 1000 puds of ore. In these mines are annually dug 200,000 puds of ore, the best of which produces a tenth part of the whole, and the three lavatories, or washing-houses, extract annually from five to seven puds of pure gold-dust, each pud thirty-six pounds, English.

On the 26th of June, I returned to Catherineburgh and set out, the next day, for Newjanskoi, a distance of forty-eight miles, to see the oldest iron-manufactory in all Siberia, and which has been in constant work since the year 1701, where there is a wooden church with a stone-built steeple, 189 feet high, with harmonious chimes, an old-fashioned but fine and spacious
stone-built

stone-built house, with wings in which the proprietor lives, and many other buildings. Near the steeple, stands a great, cast-iron column, as a monument erected to the founder of these works. In a circumference of about six miles, here are 1200 dwellings and only 4000 inhabitants, the chief of them old, faithful servants and substantial people. Through the streets run little canals, with a number of bridges over them. In these streets are many shops where all sorts of iron and copper-ware are sold. Here is a foundery and two high furnaces, one of which is twenty ells high and has four double bellows, and can cast 700 puds of raw iron in twenty-four hours, which is the largest furnace in the whole Russian empire; near it are two hammers, under which the iron-stone is broke and carried, in pails, to the high furnace, where it is wound up into it; a bar-forge, with a hammer, and another where the large instruments, here used, are made; a building with two bar-hammers, another with four, two others with three each, an anchor-forge, a water-bellows and three others; a mechanical contrivance to draw out iron between rollers, and plate it; sundry large hearths to heat iron, several tin working places, another bar-forge, where are four bar-hammers, a saw-mill, a corn-mill; a polishing-mill, where they polish bells and iron-ware; a house where bells are cast, two buildings for tinning iron-plates, one where copper-vessels are made, one for forging mine-instruments and tools, and twenty-four forges where all sorts of iron-ware is made,

made, as kettles, pots, pans, &c. and most of these works are worked by water. It is a delightful sight to see boys, ten or twelve years old, working with their parents and earning a good salary. There is also here an old wire-factory, a new place for lock-smiths and fundry other erections, all surrounded with a fortification.

This manufactory was founded by *Akimfi Demidorf*, a counsellor of state, and remained in that family till it was sold to the assessor *Sarwa Jakowlef Sabakin*: it manufactures, annually, 200,000 puds of bar-iron, besides a vast quantity of all sorts of iron-ware. The proprietor of these works is the sole proprietor of many others, nearly as capital, in the neighbourhood.

‘ There are many more iron and copper manufactories in this district, some whose works are more extensive than others, all of which *Dr. Pallas* visited, but, as they are all upon a similar plan, it will be tiresome to an English reader to repeat them, and, on this consideration, we will pass them over.’

At one of these manufactories, is a kind of beautiful Siberian cedar-trees, or cedar-firs, which have been planted upwards of forty years and are only five inches diameter in their trunk; but have born fruit many years. This year, they bore no fruit, and the peasants told me, that their bearing is periodical, but I could

not

not learn, what this period was; some said every fourth or fifth year, others every tenth year, so that I could not credit the assertion. This tree thrives best in the pathless mires of the mountains, and I am of opinion, that it's fruiting depends much on the moistness of the weather; for, proceeding farther in the country, I found, that, even in the present barren year, these trees, in the most watry places, bore the most fruit, and that it requires two wet years together to make them bear well. Of all inland resin-trees, none, not even the larch, grows so slow as the cedar-pine; from hence one would conclude it must surpass every other tree of it's genus in hardness and solidity of wood, and in beauty of growth and appearance. But, notwithstanding this, it is most certain, that the wood of the cedar-fir, if compared with that of other firs and larches, is soft and perishable; but, in appearance, colour, veins and lightness, it is similar to the pine and, of course, must be excellent for joiners use, and there are trunks to be met with in the mountains from which planks might be cut more than two ells in breadth; and I think they would make excellent masts. There is no tree that can be imagined of more beautiful growth than the old cedars of this kind, no eye being able to determine the loftiness of their tops. The best idea of it's growth will be formed, when I say that, upon a young tree, the trunk of which was five Paris inches and four lines in diameter, I counted sixty rings or marks of annual growth, the diameter of these of the
fifth

fifth and sixth year were only one and one-third of a line, and those of younger growth, were no more in diameter than the thickness of a piece of paper four times folded. 'How many years old then must such a tree be and how lofty, whose diameter is more than two ells?' I saw also a larch-tree there, only five inches, nine lines in diameter, though, by its rings, it was fifty-nine years old.

From the manufactory of Newjanskoi, we had in sight the abestos mountain, which I determined to see. I accordingly rode there during a continual rain and was wet to the skin, it being at the distance of six miles. It is a long, steep, narrow, rocky tract, rising in the middle of a wood, and the number of its pits and openings made it dangerous to ride on; however I made shift to reach its summit, and found it consisted of a hard, loamy chert, the layers of which fall into its depth under an angle of fifty-four degrees, from north to south, and is chiefly dug up in pieces like a cuboides or trapezoides: within the layer of this hard rock is interspersed, a great deal of greenish amianthus, which in the mountain remains firm and indissoluble, but by decomposition, splits into stiff bristles. Near this amianthus lies, generally, a fine silk-like asbestos, (indeed the natives call it, in their language, the silk-mountain) of a yellowish-green colour, uncommonly glittering, its threads running in a perpendicular direction. There was formerly a woman, in Newjanskoi, who

who had the art of weaving this asbestos into incom-
bustable linen and gloves, and also made paper of it.
‘ I am told that in India, they make sheets of it in
‘ which they burn the dead and thus collect the ashes,
‘ by unfolding the sheet again when cold. Linen made
‘ of this mineral, will burn clean in an oven, like to-
‘ bacco-pipe clay.’ However hard and difficult it is
to dig it, yet it’s flexible fibres may be rubbed into a
soft and silken wool, which can be twisted into a thread
and woven by means of oil, and be afterwards cleaned
from any oiliness by fire. But as the whole seemed to
have no other object in view than to gratify human
curiosity, those who opened the pits, left off working
them and it is scarcely existing in remembrance.

Before I leave Newjanskoi, I must not omit to men-
tion two manufactories that have rendered this place fa-
mous in Siberia, and do honour to the memory of
Demidorf. One is for the making of frames and wheels,
two articles very much sold here, and made of field-
birch, having no oak in this country. It is indeed
curious to the mind of a naturalist and worthy to be
remarked how far this field-birch is superior to forest-
birch, in hardness and solidity of wood. I weighed a
cubical piece of each, exactly of the same size, and
found the wood of field-birch two seventeenths heavier
than that of forest-birch. Such a difference may be
felt with the hand. The wood of the former, when
dry, even surpasses the oak. The second manufactory
is

is that of varnishing and japaning copper and iron tea-vessels, wooden bowls, waiters, &c. This is a very profitable branch of business. There is some part of this furniture to be seen, which rivals the varnish of the Chinese, and almost surpasses the French, except in paintings. The method they use is kept a secret among the workmen, and they take no apprentices unless they are well paid; but I know, from authority, that the whole secret consists in common linseed-oil, boiled thick and blackened with wood-foot. They let the oil stand some time in a hot oven, in order to mix it well with the foot, and lay it thin over their work with their fingers; but do this eight or ten times successively, and after every time set it to dry in a hot oven; the finer and thicker the varnish or japaning is wanted, the oftener it is to be done over. In order to put on the ornaments, they cut out flowers, fruits and landscapes in paper, lay these figures on the varnish, cover them with gold-colour, and then with the clear, linseed oil again, without the foot, several times, drying the vessel each time as before.

My next visit was to a tannery, where having no oak, they use willow-bark and the inner, brown birch-rind; but they prefer the former, and it takes a chord and a half to tan ten hides. I was also informed that the purest and most odoriferous birch-oil, which is almost as clear as linseed-oil, is chiefly used to soak the skins: and this oil is drawn from such pure, white birch-rinds,

as are taken from old birches, partly rotten at the root, so that there remains little but the outward, oily bark. All the oil burnt from fresh birch-rinds, to which a great deal of the black, bark substance adheres, is generally very impure with soot and very unfit for tanning. It is a wrong notion to suppose any wild rosemary or other bush is burnt with the birch to give it a fragrantcy; the purer and cleaner the birch-rinds are, the more fragrant will be the oil, without any other addition.

In my way on, I could not but take notice, with astonishment, that the horses we had with us, being hungry and towards night, wherever they met a hellebore plant, (*Veratrum*), which was not yet in bloom, stooped and eat it greedily. The drivers of our waggons assured me, that their horses eat this plant in spring without the least hurt, and though it was hurtful to cattle in other places, it had no other effect on theirs, than sometimes to purge them gently. Some country people, fond of chattering, who accompanied us from Newjanskoi, made us spend the night very agreeably in discoursing on the strength and efficacy of wild herbs and plants, one of whom seemed to possess an uncommon knowledge. He praised the Greek valerian, (*Polemonium*), as efficacious against the falling sickness, and called it *Troizwetki*, (three-coloured flower); the sage-tree, (*Phlomis tuberosa*), as a remedy against swelling of the glands in the groin; the aconite, (*aconitum*

nitum lycoctonum), against singing or hissing in the head; the devil's bit, (*Succisa*), which grows very tall, as high as a man's head, and which he called *pupownick*, (navelwort), he said was a sure remedy in pains of the belly, somnolency and giddiness of head. But his greatest secrets, this country doctor seemed unwilling to reveal; however, with much persuasion and a good reward, he communicated the following, which, highly absurd as they are, I will give my readers for their entertainment. The root of the sky-flower, (*Cinera-ria Sibirica*), which grows in all the marshy woods and consists of many thick threads, under which name the marsh-marygold (*Caltha*) is also known among the country-folks as a domestic remedy, he declared would bring a man, dead drunk, to himself and quite sober him, provided he drank no strong liquor the day, he took the medicine, and that he had often tried it. His second secret, most pernicious to health, is said to be in use and fashion among the common women in Russia and Siberia; this is to prevent pregnancy, by taking a certain dose of ceruse, or white-lead, which is used as a paint, at a time a woman expects her menstrual courses, which checks them and destroys conception. It may answer the purpose, but the effect will certainly cease, as soon as she leaves off this dangerous remedy.

About twenty-eight miles from Newjanskoi, I reached, on the 1st of July, the iron-manufactory of Inshno
Tagilskoi,

Tagilskoi, where all sorts of iron-work are made, by water-mills, also joinery and turner's work. In this town, there is a beautiful, stone-built church, with a fine cupola and lofty steeple, having a complete ring of bells and harmonious chimes. The whole edifice is covered with iron-plates and divided into a summer and winter-church, embellished with the highest degree of splendor and a variety of precious ornaments. Among the curiosities of this place are two enormous cubical magnets, which form the altars of each church; the one is five yards high, four and a half broad and almost as thick; the other seven yards high and five yards broad and thick, much penetrated with verdigrease. They began to build this church in 1764. Here are also, a court of Justice, a comptoir, a fine, wooden mansion for the proprietor, a foundling hospital, a drawing-school, several neat apartments for the reception of strangers and 1034 houses. The male inhabitants are 2579, but they are all slaves, except 121. Among them are many excellent workmen and the proprietor may boast, that if there is any manufactory well supported with clever people, it is his.

The great blessing of this manufactory, is a magnet-mountain, within a mile of the place, added to a rich iron-stone soil all round, covered with timber. This mountain was discovered in the year 1702, by the Wogulians, and was opened in 1721. The manufactory was established here in consequence of it. The

mountain extends itself from north to south, yet is, in the whole, conical, steep and it's perpendicular height about forty fathoms, or 280 feet. It is full of iron-ore, 100 lb. of which yield 60 lb. of fine, pure iron. The magnets which are here found abundantly are chiefly among the meanest iron, about thirty fathoms deep and, in their clefts, overshot with verdigrease.

The mountain is, at present, divided into three different manufactories, those of Tagilskoi, Newjanskoi and Rewdinskoi. Since the establishment of the manufactory of Tagilskoi, it has dug many millions of puds for it's share, and a great deal from the bottom of the mountain. They continue the works with great regularity in the form of streets, and having taken off the upper ore, the under is easily dug, and they employ three or four hundred little boys and girls, who earn three copeeks, or three half-pence a day each, besides men. The ore is collected in large heaps, curiously underlaid with timber so as to burn, fired and roasted on the spot. Such a heap will contain 400,000 puds of ore, will often burn forty days and require eight or ten weeks to get cold again. The ore is rendered fluid by this strong burning, and is knocked in pieces with short-helved hammers. The whole mountain is covered with firs and birches, and at it's marshy bottom grow young cedars, carefully hedged in.

I left Tagilskoi in a delightful, serene night, to visit other manufactories, that lie more to the northward, down the river Tagil, and passed an intrenchment, said to be thrown up by *Jermak Timofejef*, who is generally known to have been the first conqueror of Siberia, and who, after penetrating the country from the Tschusfowaja into the Serebrjanka, as far as the brook Kokui, is said to have erected here winter-tents; but after he had marched over the mountains to the Tagil, halted and threw up this intrenchment, resting here in order to build new vessels. There, however, is nothing to be seen but a rectangular ditch, two fathoms broad, constructed on an elevated cape, scarce five fathoms from the river. It's northern flank is fourteen fathoms long and it's eastern not much above ten, with two or three caves or subterranean dwellings within.

A few miles from this is a copper-mine and also an iron one, and a manufactory established near them, now belonging to the crown. The number of houses is not very great, and the works are performed by peasants, who labour for their poll-tax. But three neighbouring towns are obliged to send 7,500 people, who are employed in felling of wood, burning of coal, digging, &c. as the manufacturers cannot be spared for such kind of labour.

Adjoining, is a mountain full of iron-ore, with a summer-house on the top, to which I went on the 3d

of July, to see the prospect, which was extensive and beautiful, commanding the view of many mountains and the course of the Ural, at about fifteen miles distance. This mountain produces annually 2,000,000 puds of iron-stone, and yet this quantity is considered as very trifling.

Of all the Siberian manufactories, Kuschwinskoi is the first where agriculture has taken place. By the laudable regulations of Assessor *Alexey Moskwini*, the inhabitants, for some years, have grown their own wheat, and the crops here were very promising, notwithstanding the cold, woody and mountainous situation of this district. About the Kuschwa, the cedars begin to be very abundant, and the forests, on the uninhabited mountain, full of wild animals. Sables are seldom caught here alive, as the peasants take them quite young from their nests; but there is plenty of boars, hyænas and wolves. They catch here a great many striped ground-squirrels, which dwell every where throughout the fir, pine and cedar-woods, and chiefly live on the seeds of trees; they climb the trees, but make holes and provision-chambers in the ground, in which they lie in winter, carrying thither, by means of the bags in their cheeks, all sorts of seeds. Notwithstanding the beauty of their furs, and they might easily be caught by children, they care little about them. This animal is to met with, in summer-time, in all the resin-woods, from the Kama throughout Siberia, and is a prey to fables and other species of weasels.

During

During winter, they hide themselves in holes underground, live there on the provisions they collect in summer, and though covered with deep snow, are never benumbed by the cold or thrown into a torpid state as the marmottes. The mole is common in this district and remarkable for it's uncommon great size, and, sometimes, for it's snowy whiteness.

‘ The roads in this country are, in some places, very passable, in others, almost impassable. Round the manufactories they are kept in repair, and bridges are thrown over the rivers; in other places, they are to be crossed only by fording, or on rafts. Dr. *Pallas* rode chiefly on horse-back, his baggage following him or meeting him at certain places, sometimes in waggons and sometimes on pack-horses.’

The Siberian plough, which is here used and throughout Siberia, is without wheels, like the Russian, and has only a cross pole with handles, a pair of shafts, within which the horse walks, and a bent plough-handle fixed before, with a double or single coulter. It is a heavy instrument and far from a convenient one. They use the Finland harrow as being strong and fit for stony ground. Husbandmen, in winter, are chiefly employed in hunting fables and martens, with snow-shoes and terrier dogs, and commonly shoot them with balls and blunt arrows, from trees. Hunting the fable is more difficult than that of the marten,

which, as soon as pursued by the hounds, climbs up a tree and is easily killed, but the fable runs for it and endeavours to deceive his pursuers like a hare and, at last, when he sees no other refuge, takes to the trees and there meets his destruction,

In my journey I arrived, on the 5th of July, at a place called Jelkina, settled by Woguls, on both sides of the Tura. These people neither practise husbandry nor breeding of cattle, but live merely by hunting. In other respects, they perfectly imitate the Russians, in their habitations, dress and way of living, and rather make use of the Russian language than their own; indeed they seem ashamed to speak their mother-tongue before a Russian. They have, for many years, been converted to the Greek church, but yet remain very dull and ignorant christians. I changed horses here, (but had some difficulty to do it, as some of the inhabitants keep only one horse between two) and took with me some guides to shew me the places where they dig jasper and vari-coloured marble. Close to this place I was obliged to ford the river Iss, called, in Wogul language, *Ass*, and soon after having crossed a lofty mountain, rode through a tract, along the river Tura, where the grass stood so high as to pass over the horse and it's rider. When we reached the marble-quarry, it became dark, but as the spot was dry, I resolved to spend the night here, which was very serene and, of course, we had no covering but the vaulted sky;

sky: yet, as the night was frosty and we were exposed to the wild boars, it was necessary to light a fire, which our Wogulians did with uncommon agility; not with brimstone, for it's vapour and smoke is apt to drive away wild animals to a great distance, and injurious to the hunter, but they carry with them a handful or two of that soft, faded grass, which the rivers throw out, dried in their bosom, lay the kindled birch-spunk upon it, (which is a kind of fungous that grows on the birch tree and holds fire), and lift it towards the wind, or blow it with their mouth, till it flames. The Russians have adopted the same, and call the grass *Puischekcha*.

Rising in the morning from my airy couch, I consulted my guides, and they led me through a marshy pine-wood, where the trees were so thick and the ground so miry, that our cloaths were torn, our faces scratched and our horses, every now and then, up to the saddle in mire. There was no plant to be seen here, except the mountain chickweed, (*Moehringia* and *Linnaea*), which I often cursed in this district, it's bloom being always here a token of most impervious mires and impenetrable pine-woods.

In this unpleasant situation I rode the whole forenoon, and at last, past, with a great deal of trouble, two miry brooks and came into a woody tract, burnt out to the distance of some miles square, where a tempest, or as

the Woguls call it, an evil spirit had raged in such a manner, that it could not have looked more terrible had it been done by an enemy; but the worst was, that we lost our path among the felled trees, that laid across the road, and the swampy mire that scarce had a bottom; yet the Woguls trusted to their geographical knowledge and were convinced they should find the right path through this wilderness: Not disposed to return back, I alighted and led my horse by the bridle, skipping and jumping over the trees, and sometimes up to my knees in mire; but as there was no danger of breaking our necks or bones, we continued wandering through this wood, with axes in our hands, clearing a way before us for a mile and a half. At last, the courage and strength of my whole retinue of Woguls and soldiers left them; this obliged me to halt, and I sent two Woguls on before, to see whether they could find a way out, but they came back frightened at the scream of an owl which they heard, without doing what I ordered them. At last, they confessed they had not passed through this forest for many years, and that they were entirely ignorant of its extent and situation. Necessity, therefore, obliged us to go back and we crossed the Tura, where the water came up to our saddles and, at last, got to a village, quite spent by this miry expedition.

The forest, along the Tura, has, here and there, some cedars and a great number of tall larches, where
I met

I met with the gum of old, burnt trunks, which I have mentioned. On one tree, I found a peculiar kind of gum and on it's rind a sort of turpentine resin, but on all other young wood, I could only meet with the resin. The Woguls gather this gum and use it as glue, or chew it on account of it's sweetish taste, as a dentifrice for cleaning and preserving their teeth. In this, they are like the Greek girls, who chew mastick for the same purpose.

Next morning I proceeded on my journey and crossed the Tura again, and passed two little villages. Every one was now busy making hay, at which the women and girls made a great parade. On account of the flies and gnats, which are very troublesome, each takes with them a pot full of lighted birch, spunks or foul wood, which is rotten like touch-wood, fastened on a board, in order to prevent their cloaths from catching fire. They prefer the smoke of birch-spunks in their houses here, as it drives away the insects and does not hurt their eyes. Without this smoke, there would be no rest in these woody and northern districts. They kindle also such things and create a smoke in their yards, to which the cattle repair at night, in order to be free from the torture of the flies: as, at this time, it rains almost every day, and the cut grass cannot get thoroughly dry on the ground, they do not make it into cocks, but in long, small walls, erected between wooden poles stuck in the ground or run across; in such walls

walls the wet hay gets dry presently and does not heat. Their scythes are like most Siberian ones. Their form is like a long, narrow and bent knife, fastened on a crooked club, with which the mower, at each step, cuts to the right and left, by swinging the club about in his hands.

Going on, we saw an impending hail-storm before us, and I had just time to have a felt-tent raised, to save us from the wet. In our way to another iron-manufactory, we had to pass such a wood, as that in which we were lately lost. The horses sunk, every now and then, up to their breasts in mire, and though we went very slowly on, were, every moment, in danger of being overthrown or losing our eyes by the projecting pine-branches. The proprietor leaves the road in this bad condition for political reasons, to deprive searchers of ore or inquisitive travellers from coming to his mines. Some of the horse and foot-paths are laid with birch-timber and may be rode on with pleasure, and such-like roads might be made throughout the forest, at a little expence; but he took care to leave the most miry spots, where the mud is almost bottomless, without any improvement. It is in these very soft marshy places that pines, poplars and cedar-firs grow best and most handsome, particularly where the mine is bottomless. In this forest, I found the spurge laurel, (*Daphne Mezereum*), the red berries of which are here known by the name of wild pepper. The berries are used for
different

different purposes; internally, as an emetick for coughs in children; and, externally, to rub the cheeks with in the bath, which become red, as if inflamed by the sharpness of the juice, so that the lower class of women use it as paint. The kernels of the berries are bruised and taken, by the peasants, as a purge; a proof that their intestines cannot be found. The root, which is sharper than the plant, is used as a remedy for the tooth-ach.

Wood-cocks, hares and fables, are here caught by means of traps, called *Slopezi*, which, to break off a tedious narrative, I shall here describe. A spot is chosen where the pines do not grow thick, and where two young trees stand at about seventeen feet from each other. From these trees they cut off all the lower branches. Near one of these pines a pale or post, about eight feet high, is driven into the ground. To this they fasten a pine-pole horizontally, so that one end shall be fixed to one tree and the opposite end between the post and the other tree. Over this pole they fasten another, as a beam, almost parallel with it, so loosely fixed to one tree, at one end, that the other may be moved up and down between the post and the other tree, which is hewn smooth where the beam falls. This end of the beam is raised by a slight lifter, supported in a notch at the top of the post and its end brought down by a piece of bast, to the lower beam, where it is fastened, with a wood-cock or a piece of meat,

meat, by way of bait, so, as that when the bait is moved, the lifter loses it's hold, and the upper-beam falls down on the sable or marten, creeping on the lower-beam and catching at the bait, and thus kills it with it's weight.

Having inspected all the mines and mountains in this district, I will now give my readers some account of the Woguls, who inhabit the forests on the northern side of mount Ural and are settled about the brook Targa, where I was on the 15th of July, and took up my night's lodging among them. The Woguls inhabit these forests in single families, and each family reckons it's distance and claims the land of the adjacent neighbourhood as far as they can reach in hunting. Having no other resource to live on, necessity keeps them at as a great a distance from each other as possible, for were they to live together in villages, they would not be able to find sufficient game for their subsistence. Though most of them acquire a handsome property by catching of sables and other animals, yet they keep no horses, partly because they have no pasture for them, are unable to secure them from the bears and partly because they can better pursue their game in these pathless and marshy forests on foot. The richest among them keep a few cows, which always remain with the women near the huts, and these are all the domestic animals they have, except a few dogs and of these a very few. Yet nature has assigned them a sufficient

cient property in the beasts of the forests. The elks are their chief subsistence. Each family of Woguls makes an enclosure in it's district on some commodious spot, which often extends to a distance of seven, nine or more miles, through the solitary forest, fenced in with pales made of split firs and pines. They are very careful of these enclosures, and will not suffer any one to make hay, fell wood or take the game within them. At certain distances, these enclosures have openings, provided with pits and spring-bows, that kill the game as soon as the bait is touched, and catch whatever passes through. It frequently happens, that they catch, in these pits, female elks and their young ones, and sometimes rein-deer, though such are very scarce in this district. Their meat, which they never eat fresh, is cut out into long slices, and dried without salt, either in smoke or in the air. This is their usual food, which they eat either boiled or dry, out of their hands. Should they have the ill luck not to catch any game for a long time, and should their provision be consumed, they break the elk-bones, which are laid aside, boil them in water, and make with them a kind of broth. But they are seldom reduced to this necessity, for, besides bows and arrows, and guns, with which most are provided, they catch wood and water fowl; and those that live near a river fish, with nets and baskets, and, for this purpose, make boats of hollow trees, like the Russians, or with birch-rinds, in their own way, sewing them together with elk-sinews and tarring

tarring them. They know of no other meat, except cedar-nuts and berries, which grow in the marshes. Notwithstanding this, they are healthy and have not the least symptom of scurvy, though living in a swampy and cold, woody climate. They are ignorant of the use of plants and domestic remedies; perhaps eating no salt and being accustomed to the climate, may contribute not a little to their health, yet they seldom reach an old age. They are fond of purchasing from the Russians, flour, all sorts of things baked and strong liquor. They barter with the Russians, skins for cloaths, so that they are entirely ignorant of tanning. They work, indeed, elks claws with their hands and the fat of boiled fish, till they become soft, and of these they make gloves. They also convert the skin of the elk into long snow-shoes, or skates, like the Laplanders, with which they hunt in winter, gluing the wet skin upon them either with larch-tree gum, or some other glue, prepared by them from rein-deer blood and flour, or elk-horn powder, which, mixed, is to stand one night in a warm oven.

The Woguls are, generally, a short people, feminine and have something in their faces resembling the Kalmucks, except that their complexions are whiter; their faces are commonly round, and the women, whose favourite passion is love, are highly voluptuous. Their hair is generally long, black or dark-brown; few men
only

only have a thin, reddish beard and light-coloured hair.

The womens' dress consists in white, upper-shifts, made of coarse linen, which reach to the ground, and are tied round the waist. They hang a cloth, worked with the needle, over their head, hanging down the back, under which is tied, round the forehead, a black frontlet, decorated with beads. Their shoes are made of the bark of trees. Girls go bare-headed, wearing their hair, according to the present Russian fashion, braided into tresses. 'In winter, the women wrap themselves up in skins, like the men.'

They have adopted many of the Russian manners, even to their dances. Their own consist in short motions of their feet set close together, and two persons dancing make little steps to the music in opposite circles; so that one turns his back to the other, holding a handkerchief between them, using impassioned gestures and expressive movements. The musical instrument they use for this purpose, is a kind of harp, in form of a little boat, called, by them, *Schongourt*, strung with six gut-strings, twisted at one end round a piece of cross wood, and tuned by other little slips of wood. The player takes this instrument on his knee, beats the base with his left-hand, and the treble with his right. Their melody is simple but harmonious, and in the Tartarian taste. The Woguls are of Finnish

Finnish origin and their language, as far as I could see by a dictionary made therefrom, is similar to that of Finland. But they have many different dialects among them, and even the pronunciation, with many of the expressions of the Woguls, in the environs of the Sofwa, are already distinguishable from that of the Woguls about the Tura.

The winter-huts of this people, are square and made of timber, with a flat roof, in which they make an opening to let in the light, with a door-way to the north or east. On the left from the door, in the middle of the side-wall, stands a low oven and near it a chimney, over which the smoke goes out and the light comes in. Opposite the oven is a broad bench for sleeping on, and against the south-wall a bench to sit on. They have, commonly, a little vestibule to this hut, in which stands all sorts of household furniture and vessels; these consist mostly of troughs, and barrels of hollowed birch-trunks or birch-bark, which they use for a hundred little necessaries. Of the birch-bark, they make drinking and eating-vessels, and the women make oblong cradles of it, which are little more than boxes, and suspend their children in them, within the hut, or carry them on their backs. Of the upper, fine, birch-bark they make smart, little boxes, by boiling and cleansing it, sewing the parts together with sinews and embellishing them with fine shavings of wood, and in these they keep their needle-work. In summer-time, they are

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BASIBIANS, TAPTARIAN TEMPLE & THE WHITE CRANES.

Barrow del.

Barrow sc.

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are seldom to be found in these habitations, but live in open huts, made of birch-bark, (*Balagani*), before which they keep a continual fire, to keep off the flies and horse-flingers, which are almost insupportable in these districts.

‘ Some authors,’ says *Tooke*, ‘ pretend that these Woguls are the brethren of the present Hungarians, and found their conjecture on the situation of the Wogul territory and the striking resemblance there is between the language of the two nations. This people was subjected to the dominion of Russia at the same time with Siberia.’

‘ The Woguls, Christians as well as Pagans, purchase their wives, and the latter have often two at a time. A tolerably handsome one may be bought for the value of five rubles, and those who cannot afford this, endeavour to steal a wife. Marriage takes place without any ceremony, the young man pays the price, takes the girl to his hut and goes to bed to her, and the next day she is his wife. A lying-in woman is held to be impure for the first six weeks, all which time she remains alone. The first comer gives a name to the new-born child, without any other ceremony.’

‘ Their burial-places are in the woods. They dress the deceased, put him between four boards and lay

‘ him with his head to the north. The grave they call
‘ *Vanka*, and in it they lay a bow, arrows and other
‘ implements, without any other form.’

I could obtain no accurate or positive account respecting their ancient, religious opinions, because they obstinately deny the superstitions wherewith they are still infected, and call themselves Christians. It is certain, however, that they still persist in their ancient idolatry, worshipping several idols, and particularly for the sake of hunting. It is said that they call on different idols for elk-hunting, sable-hunting, &c. and even bring offerings to the images of these animals. There is an elk-calf, (*Wolenn*), roughly carved in stone, near the habitation of the rich Wogul Denischkin, upon the Sofwa, of which they relate many fictitious stories, about it's being petrified. Over it they have built a hut, to which the Woguls repair from the most distant parts, in order to obtain a lucky hunting-day, by their prayers and little offerings. They have, also, idols of human shape; some of them are carved in wood and have shot or coral-beads instead of eyes. About a year since, some ore-searchers found, in a tract of wood, between the Sofwa and the Loswa, on a high pine, a cast, brazen image of a human form, with a hunting lance, and this certainly was a Wogul idol. Before they were converted, they used to place their idols on steep, rock-walls, in rock-caverns or on high pines, that their worship might excite a sacred awe.

Near

Near the Lofwa, juſt above the brook Schaitanka, is a cavern, in a chalk-mountain, renowned, to this day, for being a temple or ſanctuary of the Woguls. Several bones of victims and ſometimes little images, copper-rings with carved figures, &c. have been found in it, which the Woguls purchaſe from the Ruſſians, and ſecretly adore as idols. Numberleſs brooks, mountains and places are called, in this part of Siberia, *Schaitanka*, or *Ichaitanſkaja*, becauſe the Woguls held there, their idolatrous worſhip and their idols, and are called indifcriminately, by the Ruſs inhabitants, *Schaitan*, or the Devil.

‘ *Torim*,’ ſays *Tooke*, ‘ is a divinity, under whoſe
 ‘ ſymbol they convey the idea of a univerſal god, the
 ‘ merciful Sovereign of the world. They have divers
 ‘ deities inferior to him and in ſubordination, and diſ-
 ‘ tinguish them by various names. The ſun they con-
 ‘ ceive to be the abode of *Torim*; but that orb itſelf
 ‘ is, with them, a divinity, as is the moon, the clouds
 ‘ and principal phænomena of nature. The Devil,
 ‘ whom they call *Koul*, is, with them, of very little
 ‘ conſequence; they conſider him as a contemptible
 ‘ being, and ſcarce beſtow a thought on him.’

‘ The chief feſtival of the Woguls is called *Yelbala*,
 ‘ and held at the commencement of the year, which is
 ‘ at Eaſter, and the feaſt is ſaid to be that at which
 ‘ God deſcends upon the earth, by which they mean

‘ the return of spring. Another festival is *Cenkobo*;
 ‘ celebrated on the second new moon after Yelbola.
 ‘ At these festivals, they sacrifice victims, either a
 ‘ horse, cow, sheep, goat, or wild-fowl. Sacrifices
 ‘ for the sick, every one performs at home.’

On the 22d of July I visited another magnet mountain, that which lies near the river Ifs. The magnets here are mixed with grey blinde, and are often found of many puds weight. I saw magnets of seven pounds that would lift and bear above thirty-six pounds weight; small magnets that would raise twenty or twenty-five times their own weight, have been found here.

On my return to Newjanskoi, and not far from that manufactory, I met again with that beautiful red-lead spar, which I saw in the gold-mines, and which has never been seen in any other corner of the world; and had now an opportunity of finding out the quantity of lead it contained. I made an assay and found that 100 lb. would produce about forty-three pounds of lead and about one grain of silver; whereas the raw clay, from which the spar was dug, yielded but six pounds of lead per cwt.

August 17, 1770. ‘ There is nothing further in our
 ‘ Author’s travels, that would entertain our readers or
 ‘ be any ways useful to them, till he arrived at *Troiz-
 ‘ kaja Krepost*, on the 17th of August.’ This is a fort
 lying

lying on the left of the river Ui, which springs from the Ural, not far from the sources of the Jaik. The Uwelka unites with the Ui, about three quarters of a mile from the fort, and is much broader than the latter, which here does not exceed seven or eight fathoms. This place, where the chief officers and men of the line reside, is pretty enough; it is built in a square form, with bastions in the angles of its wooden wall and ravelins, also four towers with gates upon the flanks, besides a ditch, chevaux-de-frise and competent ordnance. Of public buildings there is a fine stone-built church, a wooden church, a mansion for the general, and sundry pretty buildings, in which the several officers live. The rest of the houses are not in good condition, except that of the custom-house-director and some new dwellings belonging to merchants. All the houses, which amount to some hundreds, are built in regular streets and the name of each street wrote on the corner, in black tablets. Here is a bridge over the Ui, whose opposite side, belonging to the Kirguese, has a well-built market, where trade flourishes with the Asiatics. It is an extensive square, built of wood, divided into a piazza and Bucharian market-place, on the left; another on the right, for the natives, and a large place, encompassed with great booths, for the trade of the Kirguese, besides some bastions and a wooden watch-tower, which commands a view over the Kirguisian step. It is also fortified with chevaux-de-frise and on three sides, from the river, surrounded with ditches.

About the river are inns, built with wood, and eating-houses, for the trading people and merchants.

I can say little about the trade here, which has been reckoned more extensive and advantageous than that of Orenburg, there having, for a year past, been a misunderstanding between the whole horde of the Kirguese, who inhabit the neighbouring step, and come here to trade; which misunderstanding has not only estranged them from these boundaries, but also determined them to render the road of the Asiatic caravans, to this place, unsafe; and it is but a few weeks since they sent a detachment of regular light-horse into the step, which went a great way without getting a sight of a single Kirguisian; so that a reconciliation with this people is not soon to be expected.

During my stay here, the chief of the horde, called *Ablai Sultan*, sent some deputies, but their proposals and pretensions were so excessive as not to be granted. Here is a strong garrison of Baskirians, and a report of warlike preparations has made the Kirguisian warriors so shy, that there is none to be seen in the whole step, as far as the mountains. This has been confirmed by merchants who travelled from thence, and who were so lucky as not to meet a single Kirguisian; but another caravan arriving soon after, had not the same good fortune, but was stopped and detained by the Kirguese till late in autumn.

As

As far as I could learn, most of the caravans come here from Taschkent. There are but few Bucharians, and those of Chewinzka are seldom to be met with. The goods, brought by the caravans, are spun and new cotton, coarse and fine cotton-stuff, callico of different qualities, of which that of Taschkent is the best; they seldom bring India ones. Cotton and silk-girdles, printed cotton-curtains, table-cloths and shirts; a kind of bad velvet, curled and striped lamb-skins; Turkey worm-feed and dried fruits; also Chinese silver and Bucharian, or Persian, gold-coins. The goods they carry back, are red and scarlet cloths, foreign velvet, camblets manufactured about the Jaik, all sorts of light furs of different goodness, furs of the Wolga-musk sewed together, otter and beaver-furs for trimmings, Russian-hides, black and red; of small wares, iron-locks, needles, vari-coloured glass-beads, loaves of sugar, paper, and colours, as, allum, vitriol, cochineal, brazil, indigo, orpiment, ceruse, common paper, &c. &c.

The trade here, with the Asiatic merchants is, in general, less than at Orenburg, and the goods brought here are of less value; but the barter-trade with the Kirguisian Cossacks of the middle horde, is far greater and of more consequence. These latter are not so much versed in trade as the Kirguese of the little horde, who trade at Orenburg; their horses and the rest of their cattle are better, and the merchants here esta-

blished gain on both sides; and add to this, that all Kirguisian cattle are cheaper at Troizkoi than at Orenburg. Oxen are more plentiful in this horde and, therefore, bought here in great numbers, and there are large and handsome bullocks among them. Horses here are larger and stronger, but as wild and untamed as those of the little horde. Sheep and goats are of the same form and nature; besides these the Kirguese bring furs of wolves, red foxes, step-foxes and little ground-foxes; lamb, sheep and oxen skins, coarse camels-hair, colt-skins, hair-lines, &c. &c.

In order to give the reader some idea of the luxury of these Asiatic nomades and to shew their wants, I will add here a list of all wares and toys, which the merchants of this realm barter with them, at a great price, and for which they receive cattle, furs, and Chinese silver, which the Kirguese get by their cattle-trade. These goods are, scarlet and red cloths, from the finest sort to the soldier's coat, camblets manufactured in the country about the Jaik, calimancoes, white and parti-coloured stuffs; napkin-cloth, Chinese cotton-stuffs, nankeen, Chinese and foreign velvets, old and new furs covered with silk and half-silk stuffs; good fox, otter and beaver-furs, for bordering of caps; thin silk cloaths, striped and figured linens for cloaths; cotton and silk-girdles of Astrachan; hides and cordovans; all sorts of female ornaments; tresses, tassels, fringes, breast-pendants, turned and polished glass-beads;

beads; pearls, a kind of snail-shells, called *Serpent-heads*; looking-glasses, combs, razors, needles, filk-yarn and filk-thread; ceruse, rouge; all sorts of iron-wares, as cast and hammered boilers, ladles, trevets, chains, horse-harness, locks, pad-locks, iron-traps, axes, knives of all sorts, fizards, fire-steels; buckles, iron, copper and tin-buttons; funnels, needle-cases, snuff-boxes, pipes, tobacco, horn-cases; also copper and tin-ware, raw and in plates; iron-wire, tin-vessels, varnished and common cups; little trunks, with iron-bands; carts and waggons; materials for dying, as alum, vitriol, red-wax, sealing-wax, pitch; groats, rye-bread and wheat, common tea, hay, &c. All these articles being mostly inland goods, are sold at a considerable price to the Kirguese, and make a commercial intercourse with that nation very important.

It being well authenticated that the adjacent districts of the step were free from Kirguese, I would not neglect the opportunity of viewing some remarkable places there; I therefore went, on the 17th of August, to a Koschena, or Tartarian temple, kept sacred both by the Kirguese and Baskirians, and situated in the middle of the desert, upon a little river which flows into the Ui, about seventy-five miles from this place. My escort consisted of twenty Cossacks, from the district of the river Ui, and eighty Baskirians, Mestscheraks and Tartars, with the Baskirian Starchin Schoker. Having travelled unmolested the whole day, I ordered my
tent

tent to be erected in the evening, and slept quietly on the step. The night was gloomy, yet without dew, and the next morning was fine and serene. The day after, we reached the Tartarian temple, to see which, I undertook the journey. It stands on an elevated, open, level ground, in perfect good condition, and the wooden-work within shews, that it is not so very ancient as reported; yet there is no Baskirian or Kirguese that remembers it's being erected. Round about it, is a circular ditch, 100 fathoms in circumference, which, on account of the sandy soil, is not very deep. Within this ditch is the place where the Kirguese, if in the neighbourhood, bury their dead.

The lower part of the building, of which I have given a representation, is square, thirteen Russian ells in breadth and seventeen in length: the front and entrance are towards the south, and raised above the lower part by a wall of two ells and a half; the three other sides are ornamented with a cornice, consisting of nine rows of outstanding bricks, of which the three middle ones turn their angles outwards. On the whole front, runs a chamfret, as an ornament, and two others on both sides of the porch. This porch is of Gothic construction. It is three ells and three-quarters wide, and rather more than seven ells high. Within, on both sides, there are arched niches, four ells high and two and a half broad and deep, in each of which is a little, square air-hole through the wall. The inner-door is
also

also arched, but the inside of the arch is filled up with a thin wall, resting on a cross-beam, of course, the height of the gate, from the sill to the cross-beam, is but three ells and a half, and the breadth, seven-fourths. As the bottom or floor of the building within is somewhat raised, there are a couple of brick-steps before it, and on the upper-step lies a sill of fir-wood, not in the least decayed, but worn in passing in and out. The chapel within is just nine ells square and the walls are two ells thick; the roof, within, is vaulted, flat in the middle and built in a workman-like manner, and the centre of the roof is ornamented with a ball of argill and white earth; the angles of the roof are rounded off and decorated with bricks, placed in the form of scales and supported by pilasters; in the middle of each side, within, are niches and a circular place left in the centre of each niche, half way through the wall. To give light to this chapel, there are, in the west-side, some window-holes; underneath the windows, within, all round the building, is a hollow cornice, where it is evident lights were burnt, and wherein are three air-holes in the southern wall, and two in the side-walls. In the corner are some blind holes, the use of which I could not conceive. Near the floor is another hollow cornice all round, which renders the walls thinner in these places, and, at the bottom, seems as if it had been gnawn and some stones fallen out in sundry places. Above this square building, which is eight ells and a half high, stands, not directly

rectly over the centre but streight over the arch, a funnel, resembling a twelve-angled cupola, on a perpendicular brick-work, five ells and a half high, with a plain cornice round it. The cupola is eight ells high, open above, within which are many cross-beams, so that a person may climb up to the top, and that it may more easily be done, there is a birch-trunk within, with short cut branches, serving as a ladder.

The whole building consists of red-bricks, similar in shape and form to European ones. The stones, of the inside floor, are square and of a cubic form, and laid in mortar, which seem quite fresh; the roof only is thinly overgrown with moss.

Within the porch, are birch-poles leaned on both sides, hung and covered with tufts of horses hair, manes and tails, and some rags of silk-cotton. The Kirguese believe it salutary to their horses, if some of their tails and manes is left in such a sacred place, and it is generally a Tartarian custom, when passing before such holy places, to leave something of what they have with them. Within the porch also, in part of the wall, we found all sorts of little stones, some lead balls, an arrow, gun-powder, &c. Some of the Tartars of my escort, having said their prayers, made an addition to these things, among which were a few small copper-coins. Probably the blind angle-holes within were designed for the deposit of such little offerings.

Within

Within the ditch was a variety of old and new graves, close together. The old ones, on account of the sandy soil, were almost fallen in, and it was clear that they were cased to a considerable depth, with birch-pales and wood covered with little boards. At every grave, at the north or head-end was stuck, upright, a birch-pole, seven feet high, or one or two wooden lances, with ribbands or rags tied on the top, by way of flag; and the latter is said to be peculiar to the graves of men. On some, the turf was beaten smooth and covered with mats of thin reed-grass, sewed together. About many were some old latticed-work of their felt tents, which encompassed the grave like a hedge. Upon some, lay old saddles, wooden bowls, ladles, &c. One was covered with a frame, on which they weave narrow pieces of camblots; on many was a wooden spade, with the handle stuck in the earth; and about most were twisted, round the trellis or enclosures, long girdles or ropes of horse or camels hair. On one grave, lay a kind of coffin, in form of a little boat, and turned on it's flat cover, but it's size shews it would have held only a child. On one, was placed part of a cart of Kara-Kalpakscoi, with it's two wheels seven feet high, which, perhaps, was used in carrying the body. This appeared to be one of the handsomest graves, or tombs. Round the temple, grew a great deal of kali, and I remark this, because I saw it no where else afterwards, either in these districts or those of the Samara or Ir-tish.

My

My drawing and description was not so soon finished as the prayer of the Baskirians who accompanied me. I set out on my return at five o'clock, encamped on the road and reached Troizkaja the next night, without any disaster, but that of our horses being almost knocked up.

On the 23d. of August, I set out from Troizkaja to trace the river Ui, up to the Uralian mountains, and in my way, towards night, was obliged to sleep at a guard-station, owing to a rising thunder-storm in view. Scarce had I arrived, but such a dreadful storm broke out, as I had never seen in any country I had passed through. It lasted three full hours, and during all this time, one could scarce count six seconds and generally but two or three, without seeing the most fiery flashes of lightning and hearing the most tremendous roars of thunder. The thunder-cloud had formed in the western sky, a broad, dark girdle, which stood immovable, and underneath this cloud it flashed without interruption; at last, a violent shower followed, and the next day was warm and serene again, except a few wandering thunder-clouds.

One of these forts was attacked this summer by 1000 Kirguisian robbers, who had hidden themselves in the neighbouring pine-wood, and during a blind attack upon this small garrison, carried off from the step all the horses belonging to the fort, that were there feeding,

ing, and the centinels with them, who were placed to watch the horses; some of whom were killed on the first onset, and the garrison, then deprived of horses, was unable to pursue them.

But this was a trifling disaster to the air-plague, which raged here in the neighbourhood at this time, and might, perhaps, be owing to the situation of the place, the morasses of a mountainous district, exposed to the burning heat of the sun. It was with difficulty my horses could gain admittance into the fort, an edict having been issued by the commanding-officer, that no strange cattle should be admitted into an infected place. But my opinion was, that it was proper to admit them and not suffer them to be exposed on the ground, which was the source of the disorder. I shall here dwell a little on the nature of this distemper, which makes a great ravage in this district, in moist and hot summers, where there are open steps or deserts, with numberless, fresh, bitter and salt-water lakes, and annually along the Siberian line, by destroying a number of regimental horses, there quartered.

‘ A description of this plague may be thought useless to an English reader, but when it is considered, that the same cause may operate in this and other countries, a little enquiry into it may not be unacceptable.’

Notwith-

Notwithstanding all the pains I took to be an eye-witness of the effects of this plague, I could not get an opportunity to open a fallen horse, and examine into it as I could wish. The plague had raged during the hot summer-months, especially when the sultry south-winds blew, but as soon as contrary winds succeeded, the evil relaxed; but if these contrary winds do not continue, the disorder rages as before, and will even attack those men, who, in these districts, are more or less exposed to it. But this evil seldom shews itself in towns or forts, either on men or cattle. The former commonly feel it in the field, or when they go into the country, hay-making, attending their herds, &c. especially where the district is swampy. It has been observed by a detachment lately in the Kirguisian step, and also upon many other occasions, that there are certain low grounds, in which this distemper is generally to be met with. When this detachment had passed the night on such places, it commonly happened, that not only many horses fell the next day, but that the infection spread itself to men. All these are very strong proofs of what I heard in other places, during the winter, of a similar plague, that used to shew itself in malignant tumours. I even know that a gangrenous inflammation of the throat, about the river Irtysh, has been considered as the same plague as that which raged here. From the above circumstances and other symptoms of the disorder, it seems plain, that it's principal cause is certain insects hovering in the air, and almost invisible

invisible to the eye. Add to this, that it seizes men, horses and cows, whose skin is not much sheltered from their attacks; whereas sheep, whose bodies are defended by their wool, never suffer in this calamity, let it rage ever so violently; and also, that cooler spots are quite free from this evil, at a time when it is prevalent in others. About the Irtysh, there seldom a year passes without this plague, but near the water Burla, situated only seventy-five miles from the Irtysh; where the air is always cool, this scourge to men and beasts is unknown. Here the inhabitants drive all the cattle they can spare, from the forts and stations, to feed during the unwholesome season.

I will now describe the symptoms of this disorder in men. The first is, that the soundest and most healthy persons, of any age or sex, are suddenly troubled with an itching, followed by a hard tumour in some particular part, which seems to arise from the sting of a fly, or horse-stinger. This swelling breaks out in the covered or uncovered parts of the people, but generally in the face, and, among horses, in the groin and abdomen. It rapidly increases in size and hardness, and grows so insensible, that one may prick the swollen part with a needle, till we reach the sound flesh under it, and the patient not feel it. In the centre of this hard tumour is commonly discovered, in the external part, a red or bluish point, similar to the sting of an insect, and if remedies are not applied, the gangrenous putri-

dity will extend itself farther. During this first stage of the evil, the patient feels no internal indisposition, but with the increase of the boil, he is afflicted with head-achs, anxiety and restlessness, which are, perhaps, but the natural consequences of his fear of danger; though the same anxiety, even to sadness, is visible in cattle, but not till the distemper has reached it's highest degree and seems incurable. Some peasants, who accompanied me and had been afflicted with this disease, told me, that, after the first symptoms had shewn themselves, whenever they rode through a brook or within sight of water, they felt themselves very faint, feeble and ready to swoon.

Cattle generally die of this distemper, partly because the boil is discovered too late, and partly because the common people do not like to meddle with the cows; but men presently get free from it, as soon as proper remedies are applied. Dr. *Gmelin* has, in his Siberian travels, described the method of curing it. The common people, after pricking the hard swelling in several places with a long needle, rub into it a mixture of sal ammoniac and tobacco, enjoining the patient not to drink any thing cold and to refrain from certain food. About the Irtysh, they prick the tumour and bathe it with a strong lye of wormwood-ashes, and a decoction of tobacco and sal ammoniac, or allum. On the line of the river Ui, infallible cures are said to be performed by a hot application of night-shade, reduced to powder,

der, sal ammoniac, levain and oatmeal. Yet the generality of the lower-class of people, prefer rather the old, painful remedy, and even surgeons have adopted it. In some places, they apply a living frog to the part, but I cannot say with what success. The remedies I have mentioned, often successfully applied to horses, are of such a nature, that they will kill any species of insect, and corroborates my opinion of their being some venemous insect, which, during the sultry summer days, rises in the air of certain, swampy spots and finds it's way into the skins of animals, thus causing that dangerous, gangrenous and deadly swelling. Perhaps this is an insect similar to that observed by Swedish naturalists, and which *Linnaeus* calls *furia infernalis*, or the hellish fury, of which we have had but very few accounts; but it is not, probably, of the same species, it having been remarked in Sweden, that this insect causes a much more rapid and most torturing death, (*) whilst this of Siberia operates slowly and almost without pain; but the experiment may be tried, which was successfully used in Sweden, whether an application of turned milk, or fresh, white cheese, would not extract the insect from the infected part. In such disorders, it would be of great use to keep the cattle all together, in a particular pasture, and make a

(*) *Linnaeus Systema Naturæ. Edit. 12. Vol. II. p. 1325.*

great smoke round them, all the time the plague rages, with every sort of roots, dried turf and dung; which would, in all likelihood, keep off the insects from troubling them.

‘ This country, as far as Dr. *Pallas* has hitherto travelled, seems to be inhabited only by nomade nations, except at the forts and manufactories. The old boundary of the Russian empire, before it’s territory was extended as it is, was fortified by a line of redoubts, and properly garrisoned to keep the Tartar nations from encroachments. These garrisons are still kept up, and he travelled from one to the other, making excursions from each, on both sides the line, where he could hear of any thing worth his inspection. It appears that the roads, from place to place, are beaten and, in summer-time, tolerably passible; near the forts and manufactories, they are kept in some degree of repair, and where there is no permanent, Tartarian village, and the distance is too great between fort and fort, post-houses, for the accommodation of travellers, have been erected, where horses are kept in readiness for their use.’

‘ From the 26th of August to the middle of December, 1770, he was detained, by an inflammation of his eyes and swelling of the eye-lids, occasioned by the burning heat of the sun and the salt-dust, during his journey through the step or desert of Troizkaja;
‘ but,

‘ but, having some young gentlemen with him, who
‘ studied under him, he sent one to explore the country
‘ in the neighbourhood and another to take an account
‘ of the fisheries in the Caspian sea. The one was em-
‘ ployed in searching the depth of caverns, which are
‘ not of sufficient magnitude to claim the attention of
‘ an English reader; but, the Caspian fisheries, we
‘ shall give an account of, as Dr. *Pallas* has related
‘ them from the last gentleman’s account.’

September. The weather was so favourable in the beginning of September, that I wished to have been able to have profited by it, but the least air made my eyes exceedingly painful. I was able, however, to take notice of the wandering birds, and it was delightful to see them crowd here from the northern districts, where, according to accounts received by travellers, the month of September had begun with snow and frost. These took up their abode in the numberless lakes of this step, which afford them plenty of food. Every spot was full of wild-geese, ducks and all sorts of water-fowl, which are never wanting in autumn, in the province of *Issetskoi*. In spring, these ultra-marine birds direct their flight, first to the warm southern steps, which the snow soon forsakes, and there stay till the northern rivers are free from ice. They then draw northwards, commonly with the end of April; particularly the north-goose (*Anser erythropus*), the ice-duck (*Anas byemalis*), the large, vari-coloured diver (*Colymbus arcticus*), the

white snow-goose and many others. Great numbers of these remain and people the lakes, namely, the large wild-goose, common ducks, divers, the several species of gulls, the grey and white crane, herons, wood-cocks, &c. yet most of them fly also northward. Several species, however, remain in these warmer districts and never go farther north, particularly the bergander (*Tadorna*), and the red duck (*Anas rutila*), which arrives the soonest of all others, (having it's abode in the neighbouring, southern districts and lakes of the Asiatic desert) and returns again with the beginning of August, as soon as it's young are fledged. Those birds which build their nests northwards, return to the south in autumn and feed in these watry districts, till the general approach of winter drives them more to the south or across the sea. The first that return are the common, wild geese and many species of ducks; soon after these, the north geese and cranes, and, last of all, the ice-duck, especially on the salt-lakes.

On the arrival of the geese, preparation is made by the Cossacks and peasants to catch them, a diversion they are fond of, when harvest is over. The manner of catching is worthy description, as they are taken flying, in nets of the following form,

They fix on a lake, pretty well encompassed with birch-wood; such a lake this bird prefers, as sheltered from the wind and affording a more peaceful retreat,
and

and greater plenty of food. Every morning, at sunrise, the geese leave these lakes to feed in the open desert or step, and return at night. On that side of the lake, or in the place through which the geese are accustomed to return, they hew down the birches, so as to leave a straight passage or alley about sixty feet broad, through which the geese will afterwards take their flight, which is not very high, when so near home. When there are more lakes than one near each other, they open such a passage from one lake to the other; and, as the ducks will cruise through this passage often in the course of the night, they are caught also. At twenty-five or thirty fathoms from the lake, they leave, standing, two very high birch-poles, whose distance is so studied, as to fit the net which is spread across the avenue from side to side. These nets are made of strong, hempen cord, from thirty-six to sixty feet long, and from fourteen to twenty feet broad. The upper-part and short sides are bound with a rope, and at both the upper-corners they fasten a small cord. On the top of the two tall trees, converted into poles by cutting off the branches, they fasten a stake perpendicularly with a fork at the end; and, climbing up the trees, carry the cords, fastened to the corners of the net, up, and fix them over these forks. This enables them to draw up the net to the top of the poles and expand it, so that the upper-part shall be twenty-four or twenty-eight feet high, and the lower-part within six or eight feet of the ground. The net is then strained

tight and kept so by strings fastened by pegs to the ground. The end of the ropes that draw up the net, are fastened also in the ground, at some distance behind, and the fowlers lie down on the grass, near them, one on each side, waiting till the morning for their game. The geese generally rise from the lake an hour before the sun, and, of course, do not see the nets in the dawn, and as they fly with their necks right forward, their heads are soon through the meshes. The fowlers, who have the ends of the ropes in their hands in readiness, no sooner find the geese touch the net, but they immediately let go the rope, the net falls by the weight of the geese, and they are entangled and caught. Sometimes they will catch ten, sometimes twenty at a time, but they always catch some. Besides the large, common goose and north-goose, which is the most delicate bird, roasted, to be met with, they take, in the same manner, different sorts of ducks and divers. When the net is removed in the morning, they leave the draw-ropes over the forks on the top of the trees, to prevent climbing a second time, and never remove them wholly, till the season of catching is over.

At the latter end of this month, arrived here, Capt. *R. De Rytshkof*, the son of the learned counsellor of state and author of the same name. I left him in the spring at Ufa, with directions to travel over the northern districts of Casan, and as he employed himself chiefly in the topography and history of the people, which

which will be printed distinct from this tour of mine, it is unnecessary to say any thing about it here.

‘ For the information of our readers, we will endeavour to supply this deficiency, from that author. The government or regency of Casan, now comprehends Permian and the provinces along the Viatka, neither of which made any part of the antient kingdom of Casan, till it was subdued by the Russians. The greatest number of the Tartars, dispersed by the war, have since collected and are settled in the environs of that city. They are estimated at above 10,000 males, and occupy two considerable slabodes or suburbs of the city of Casan, one of which is embellished with two stone-built mosques and several misgirs or very high, round towers, the remains of the old city. The other slabode contains two medscheds, or houses of worship, built of wood. All the other Tartars of this regency, dwell in separate villages, at small distances from each other, and bounded by those of the Russians.’

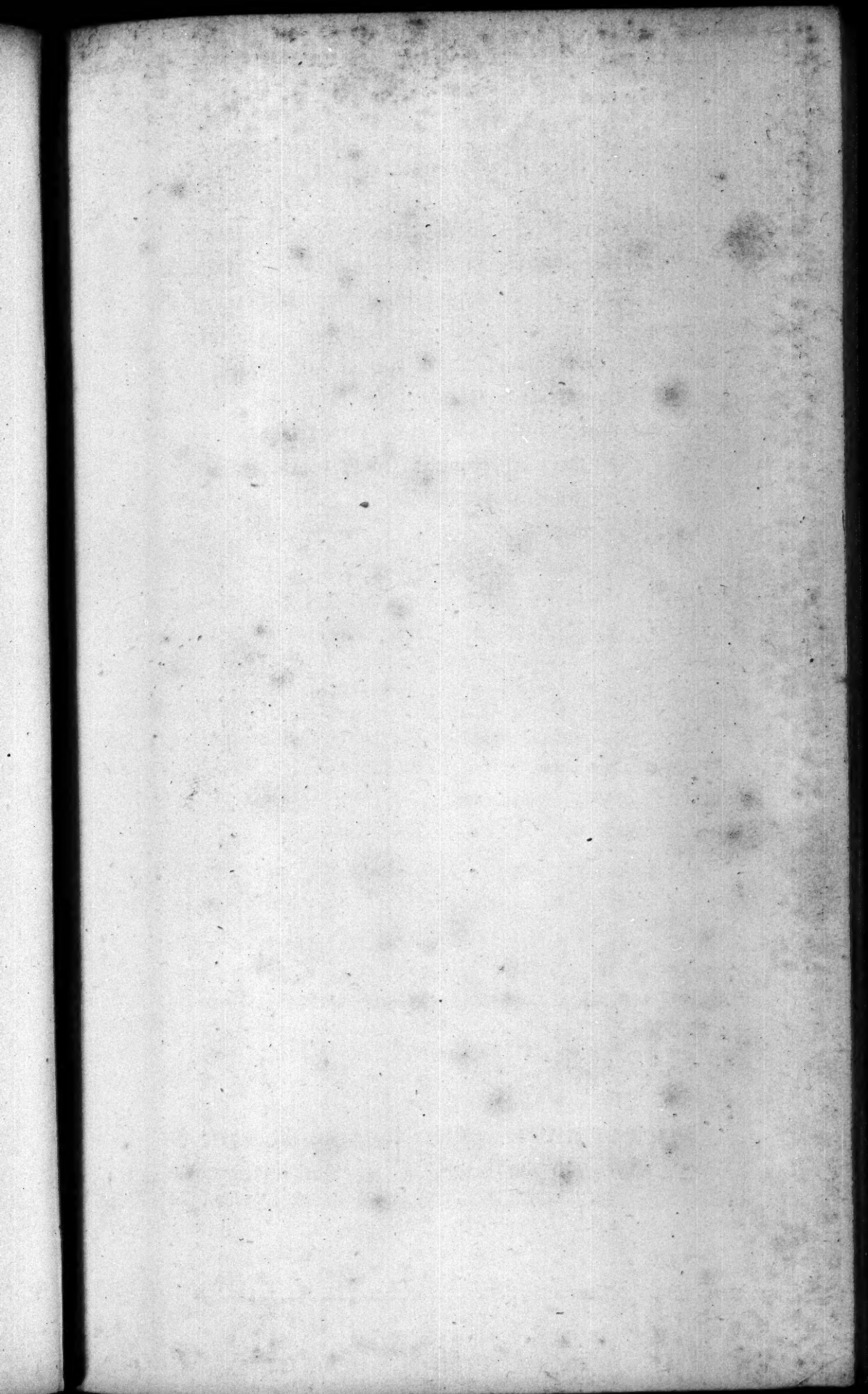
‘ In the little town of Kargala, thirteen miles from Orenburg, is a colony of Casanian Tartars, settled in 1755, who, in 1773, paid the tax for 2160 males. The place is rich, having four medscheds, or places of worship, and what is very uncommon in this part of the country, a number of pretty large, stone-built houses.’

‘ The

‘ The mien, &c. of the Tartars of Casan, may
‘ serve as the characteristic marks of all the mahome-
‘ dan Tartars in their neighbourhood, they are, in
‘ general, short, lean; have a small face, a fresh com-
‘ plexion, little nose, small mouth and small, black
‘ eyes; a sharp look and deep, chefnut-coloured hair,
‘ which is lank and turns grey long before they are
‘ old. They are, in general, well-made, and their
‘ sprightly manner, straight shape, and modest or ti-
‘ mid mien, give them a very agreeable air.’

‘ Their capacity is but moderate, but they are
‘ haughty and jealous of their honour, negligent, but
‘ not lazy, clever at all sorts of handicraft-work,
‘ neat, sober, frugal and humane. These virtues they
‘ acquire by education and the precepts of their religi-
‘ on, to which they are zealously devoted. They take
‘ a very particular care to educate their children well,
‘ teach them to read and write the Arabic language,
‘ and bring them up very religiously, so that each
‘ school has a chapel and a priest. It is not uncommon
‘ to find collections in manuscript of historical anec-
‘ dotes, in the huts of the peasants, and their mer-
‘ chants are extensively acquainted, not only with their
‘ own history, but that of adjoining states, and with
‘ the antiquities of each.’

‘ The Tartarian women are rather of a wholesome
‘ complexion than handsome, of a good constitution,
‘ and,





TANTARUS OF CASAN.

Bursey del.

Published with the sanction of D. J. F. T. M. N. 1848.

Barlow sculp.

‘and, from their infancy, are accustomed to labour,
 ‘retirement, modesty and submission. They habituate
 ‘their youth to labour, to sobriety and a strict obser-
 ‘vance of the other manners of their ancestors.’

‘The men shave their heads, leaving only whiskers,
 ‘and a little beard upon the chin. They wear linen-
 ‘shirts, wide trowsers and buskins of skins; but the
 ‘poor, wear shoes made of bark. Their other cloath-
 ‘is a loose and light gown, a long and wide upper-
 ‘coat, made after the eastern mode, with long sleeves
 ‘ending in a point, generally open within the elbow
 ‘to pass the arm through; and, on the outside of all,
 ‘they wear a belt, to which hangs a sabre, a knife and
 ‘a tobacco-pipe. They wear, on their head, a lea-
 ‘ther cap, over which they have another sort of cap,
 ‘flatter and turned up all round, with a padded stuff.
 ‘The under-garments of the poor, are made either of
 ‘linen or nankeen, whilst those of the rich are com-
 ‘posed of silk, gold and silver-stuffs. The outer ones
 ‘are of fine or coarse cloth, according to the wealth of
 ‘the wearer, sometimes faced and sometimes not;
 ‘some wear lace on them, and those who can afford it,
 ‘face their caps with gold embroidery and mount their
 ‘sabres with silver.’

‘The dress of the married women, in all the nations
 ‘where they purchase their wives, is more costly than
 ‘that of the girls, because the ornaments of the wife
 ‘do

‘ do credit to the husband, whereas those of girls,
‘ would be a needless expence. The women dress like
‘ the men, as to shirts, trowsers, stockings, buskins,
‘ slippers, upper and under-garments; only that the
‘ half-boots of the women are pointed at the toes and
‘ the cut of their cloaths are somewhat different. In
‘ summer-time, their cloaths are like those of the
‘ Tschheremisses. Instead of stockings, they wrap their
‘ legs in linen rags, tied on with pack-thread, wound
‘ several times round the calf. Their shoes are made
‘ of the bark of trees, cut into shapes and matted. In
‘ summer, they wear nothing over their shift, which is
‘ not tucked into their trowsers, but hangs over them,
‘ all round. Their shift is close at the neck and wrists,
‘ cut into shape and reaches to the knees. The neck,
‘ wristbands and seams, are covered with a whimsical
‘ embroidery of different coloured worsted, a large
‘ buckle keeps it together at the bosom, and a girdle
‘ round the waist. When they would be more dressed
‘ than ordinary, they put over this shift a habit like a
‘ morning-gown, made of vari-coloured cloths, toler-
‘ ably fine, and edge it with beaver-fur. Their caps
‘ are very high and in the shape of a cone, made of
‘ birch-bark, covered with skin or linen, ornamented
‘ with glass-beads, little, white shells and silver-coins.
‘ From this cap, a ribbon three inches broad, orna-
‘ mented in the same manner, falls down on the back.
‘ Some wear a broad ribbon on the forehead, covered
‘ with pieces of money and glass-beads, instead of the
‘ conical

‘ conical cap. They wear, also, a number of rings,
 ‘ thimbles, and all sorts of clattering pendants, at their
 ‘ girdles, which ornaments reach down to the joint of
 ‘ the knee behind, and in walking, they gingle as
 ‘ they go.’

‘ In their food, they differ a little from their ances-
 ‘ tors. Gruel and various messes of flour have been
 ‘ introduced, and vegetables of the garden. They
 ‘ eat unleavened bread, baked on the hearth, rice-
 ‘ porridge and the *Kourmatsch*, or parched corn of anti-
 ‘ quity, spoken of in Scripture, *Ruth*, iii, 14. This
 ‘ is either wheat, rye, barley or Turkish corn, (*Zea*
 ‘ *mays Linnæi*), parched at the fire and then bruised in
 ‘ a mortar, and either eaten in that state or boiled, or
 ‘ in porridge with milk and water. This Kour-
 ‘ matsch, kneaded with butter and fried or baked in an
 ‘ oven, is called *Tolkan*, and is a delicacy with the
 ‘ Tartars.’

‘ Of meat, they are at liberty, by the alcoran, to
 ‘ eat camels, horses, horned cattle, all sorts of great
 ‘ game, fallow-deer, sheep and goats, mountain-rats,
 ‘ birds, poultry and fish, but they must eat nothing
 ‘ that dies of sickness or is strangled; on which ac-
 ‘ count, they cut the throats of the animals they catch,
 ‘ and cover the blood they shed with earth. But of
 ‘ all flesh, they prefer the colt, and among all the
 ‘ dishes made of meat, they are fondest of the *bisbar-*
 ‘ *mak*,

‘ *mak*, or the five-fingered dish, so called, because they
‘ eat with the fingers, without fork or spoon: it is a
‘ hash made of fat meat, chopped and stewed. They
‘ use no seasoning; but when they would make a mess
‘ uncommonly nice, they add to it grease or butter.
‘ They drink milk alone, or mixed with flour or oat-
‘ meal, and make butter or cheese. On a journey,
‘ they have bags, into which they put sour milk, in
‘ order that the whey may run off and enable them to
‘ turn the curd to various uses.’

‘ Water is the common drink of the Tartars of Ca-
‘ fan; though the rich drink, sometimes, milk, tea
‘ and broths. They cannot dispense with tea, but
‘ prepare it different from ours. They boil it in open
‘ pots with milk and water, and, having seasoned it
‘ with butter and salt, drink it hot, out of china or
‘ wooden cups. The alcoran prohibits the use of
‘ wine, spirits or beer, but all, without exception,
‘ drink mead, thus made—The common sort is made
‘ of oatmeal, flour and honey, fermented together,
‘ and put into a solution of honey and seven times the
‘ quantity of hot water, filling up the cask with the so-
‘ lution, as they draw it for use, so that a cask will
‘ last a long time;—this they call *Aje-bab*. Another
‘ kind of mead, made of honey, whey and wild cher-
‘ ries, beaten together, they call *Eiran*.’

‘ Only

‘ Only a small number, even of the rich, sleep on
‘ feather-beds; the usual manner is to put a piece of
‘ felt or carpeting on the bench which goes round the
‘ room, and to lie down upon it. Very few have
‘ pillows, and they never take off their cloaths at
‘ night.’

‘ The koran enjoins a cleanliness, which they carry
‘ to excess. They wash themselves, all over, several
‘ times every day, and, lest they should contract any
‘ impurity from the natural excretion of urine, they
‘ make water sitting on their heels.’

‘ They commonly eat four times a day. The bench
‘ on which they sleep, serves them for table and chairs,
‘ each sitting on his legs, after the eastern manner.
‘ They wash and pray before and after each meal.’

‘ In wealthy families, the women lodge and eat a-
‘ part, and are veiled when they go abroad, and even
‘ at home they are never seen, but when the husband
‘ wishes to shew particular respect to his guests. The
‘ lower class of women and servants are less retired,
‘ and walk abroad publicly.’

‘ Old men, of good character, are held in great ve-
‘ neration, and as the beard turns grey very early in
‘ life, with them *Akshakal*, or grey-beard, is an ho-
‘ nourable title, which they confer on such men as are
‘ wife

‘ wife and prudent. These are always consulted in
‘ matters of importance, supply the place of priests,
‘ have always precedence and are arbitrators in all dis-
‘ putes.’

‘ The alcoran admitting of polygamy, every man is
‘ allowed four wives, but the greatest part have but
‘ one; the rich often take two, some will go so far as
‘ three, but very few venture upon four. These wives
‘ all enjoy the same right, each having a claim to the
‘ caresses of her husband in her turn. The purchase
‘ and maintenance of wives being expensive, and more
‘ than one creating disturbance in a family, they con-
‘ sult their interest rather more than their pleasure,
‘ and do not run to the end of the line allotted them.
‘ The custom is, to marry a second wife when the first
‘ ceases to be young and loses the power of pleasing;
‘ yet this first is the principal wife, though the new one
‘ is in possession of her husband’s affections. Mer-
‘ chants, who travel, have a wife at every place where
‘ they have a house. Should a merchant’s wife in-
‘ trigue, he gives her up to her gallant and takes an-
‘ other. A Ghivinsian, at Orenburg, who had thus
‘ disposed of his eighth wife, was already promised to
‘ a ninth. Parents urge their sons to marry whilst
‘ boys, but do not so with their daughters. In the
‘ regency of Casan and Orenburgh, the kalym or price
‘ of a wife is from twenty rubles to 500; but the bride
‘ generally

‘ generally brings a fortune with her, equal to a fourth-part and, sometimes, to the half of what she costs.’

‘ The evening before marriage, the part over the *as pubis* is shorn by women, and the espousals consist in a public declaration of the agreement between the parties contracting; a priest then repeats a prayer, pronounces them to be man and wife, and the festival is closed with music and dancing. They have an instrument, peculiar to them, called *Koba*, a kind of violin, open at top, in shape something like a gondola, having two hair-strings and played on with a fiddle-stick; the notes stopped by the fingers of the left-hand, like a violin. The songs of the Tartars are commonly in blank-verse, but very poetical and full of expression. Lovers compare each other to the sweet crane and tender turtle-dove, and present them with their eyes, their eyebrows, &c. Their music is martial, the dancing of the men, brisk and lively; but that of the women, slow and trailing, with the hands always held before the face.’

‘ Barrenness in a wife is a great disgrace, especially if a man has but one wife, and the barren women is always despised by those that have children. A woman, after child-birth, is held impure, till the customary signs of health return, at which times she purifies herself by prayer and bathing. The child is

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‘ carried to the priest within seven days of it’s birth,
‘ who whispers a prayer into it’s ear, gives it a name
‘ and then prays aloud. The name given, is generally
‘ that of the month in which it is born, so that the
‘ whole nation would have but thirteen names, if the
‘ father did not give the child the additional one of
‘ some relation, which is always done at the festival-
‘ dinner, given on this occasion. Among the Nogay-
‘ an Tartars, settled about Astrachan, they endeavour
‘ to facilitate the delivery of women, by fixing a belt
‘ under their arms, hoisting them up by this and letting
‘ them fall successively. Boys are circumcised between
‘ the age of six and fifteen, by a man who makes it his
‘ profession, and, as it is dishonourable not to have un-
‘ dergone this ceremony before the age of fifteen, the
‘ rich always pay for the poor.’

‘ When persons are dangerously ill, they are visited
‘ by the priest, who prays with them. When dead,
‘ the corpse is washed, wrapped in a linen or cotton
‘ winding-sheet, so as to have the face only uncovered,
‘ and then sprinkled with camphire. This done, the
‘ priest fastens a label on the breast of the deceased,
‘ with this sentence written on it, in Arabic, *There*
‘ *is but one God and Mahomet is his Prophet.*’

‘ The body is carried to the grave in a coffin, but
‘ put into the earth without it. The graves are five
‘ or six feet deep, made north-west and south-east,
‘ with

‘ with a space on one side within it, large enough to
 ‘ hold the body. Here it is placed, so that when the
 ‘ earth is thrown on, it does not touch the corpse; for
 ‘ they conceive, that after a short time, two angels
 ‘ take it to the judgment-seat. For the first three days,
 ‘ it is not lawful to light a fire in the house of the de-
 ‘ ceased; and, during the first month, solemn prayers
 ‘ are said twice a-day for the dead, under an idea, that
 ‘ his trial is going on in that time. One passage in their
 ‘ ritual is, *O God, give him not over unto Hell, but*
 ‘ *transplant him shortly into Paradise!*

‘ The graves of the rich are distinguished by erect-
 ‘ ing over them a little hut of barks, or by placing
 ‘ stones round them; for the splendid times are past
 ‘ in which the stately mausoleum was erected to the
 ‘ dead. Others place only a post, with a short inscrip-
 ‘ tion on it, whilst others have a head-stone and an epi-
 ‘ taph on it. A specimen of these epitaphs, we have
 ‘ given when speaking of Ufa.

‘ Not to enter into a detail of all the Mahomedan
 ‘ doctrines and opinions, it will suffice to shew the ac-
 ‘ customed ceremonies and general belief of the fol-
 ‘ lowers of Mahomet, in the Russian empire. Moder-
 ‘ tion, in religious matters, being held to be a mortal
 ‘ sin, every village has it's medsched, or chapel. In
 ‘ cities, mosques are spacious and neat, but without
 ‘ ornament, and, within, is an elevated place where

' the koran is read and explained. The floor is co-
 ' vered with carpets, and before the door is a small ves-
 ' tible, where every person leaves his shoes, on en-
 ' tering the house of prayer. So say the Scriptures.
 ' *Take thy shoes from off thy feet, for the place whereon thou*
 ' *standest is holy ground.* The medscheds of small vil-
 ' lages are poor, little huts, badly constructed, with a
 ' gallery instead of a steeple, from whence the sexton
 ' calls the people to devotion. The clergy are com-
 ' posed of agouns or high-priests, and moulas or priests.
 ' One of their agouns has his seat at Casan, another at
 ' Astrachan and a third at Tobolsk. The clergy have
 ' no settled income, but are often obliged to get a
 ' living by trade.'

' According to their faith, a mahomedan becomes
 ' impure, by touching a dead body, eating unclean
 ' food, coition, all the natural excretions and many
 ' other actions; but bathing and prayer will purify the
 ' polluted body, of course, they are always at it, for
 ' piety and good, they say, deserve heaven. They
 ' have several ways of bathing, but the most common
 ' is merely washing their hands; their good works
 ' consist chiefly in fasting and alms; 205 days of the
 ' year they neither eat nor drink, till after sun-set.'

' The Tartars are strong predestinarians. They be-
 ' lieve that the destiny of every man is fixed. and that
 ' the angel of death calls him at his appointed hour;
 ' a belief

' a belief that supports them in adversity and guards
 ' them from suicide. Numbers indulge a piety bor-
 ' dering on enthusiasm and imagine it is possible, by
 ' religion, to become a saint, and that departed saints
 ' receive the prayers of the living. Five times a-day
 ' are they called to worship, by the sexton, who sings
 ' out their creed, namely, *There is but one God and Ma-*
 ' *hommet is his prophet.* Nothing interrupts them in their
 ' devotion, which they always perform with fervency,
 ' turning their face towards Mecca, or, if at home,
 ' towards the word *Alla*, which is the name of God,
 ' and written up in some part of every man's house.'

' The prayers of the Tartars are written in Arabic.
 ' Every one has a rosary, by which he makes his peti-
 ' tions. The priest sits cross-legged facing the con-
 ' gregation, reading the prayers in a soft and pathetic
 ' tone of voice, and the assembly repeats them, or an-
 ' swers. *Amin!* When the word *Alla* is pronounced,
 ' every one heaves a profound sigh, stops his ears and
 ' puts hands over his eyes and beard, as if sensible of
 ' his unworthiness to hear the glorious name, or lift
 ' up his eyes to Heaven. During the prayers that are
 ' addressed to tutelary angels, they cast their eyes
 ' about to the right and left. At other parts of the
 ' service, they sit down cross-legged, rise often up,
 ' bend the body profoundly forward, remain so bent a
 ' long time, and frequently throw themselves prof-
 ' trate. Every one is without his shoes; the rich, in

' prayer-time, put on a Turkish turban. The agouns
' wear them always, and the moulas keep on their
' common cap, during the service of the mosque.'

' They wash themselves prior to their taking an
' oath, then striking the koran, three times, against
' their breast, say, *May thy curse smite me, if I swear*
' *falsely!*'

The other gentleman, who had been at my desire, continues our Author, to inspect the fisheries in the Caspian sea, and whose name is *Sokolof*, had an opportunity, in the course of six months and a favourable season, of making many observations on animals, birds, insects and plants, which I had not an opportunity of doing myself. By his indefatigable zeal, he sent me six species of mice, hitherto unknown to naturalists, and some of them remarkable. These are the *mus tamariscinus*, *meridianus*, *migratorius*, *socialis*, *lagurus* and *subtilis*. I received, also, from the Caspian sea and southern step, a variety of birds, remarkable for their beauty and rarity, being also new in natural history. Among them was a very large species of black step-lark, (*Alauda Tartarica*), which remains in the deserts during summer and comes southwards during winter, about the districts that are inhabited, which otherwise they would never approach; also an unknown parrot-green species of bee-eater, (*Merops Persica*); a very small species of sea-raven, (*Pelicanus pigmeus*),
the

the largest black-headed sea-gull, (*Larus Ichthyætes*), a species of large sea-duck, with a red, copped head, (*Anas rufina*), a most superbly beautiful, yellow-crowned heron, with a long head and nape feathers, (*Ardea comata*), and many other rare species of herons; also, two new species of serpents, and a number of insects and plants.

In July, Mr. *Sokolof* stretched away westward from the Jaik into the Kalmuck step and saw there, at a distance, those little wild, Kirguisian horses, called *Kulan*, but could not get near them, as they took flight at the approach of the hunters. He travelled near fifty miles over this salt-step, without being able to find a drop of fresh-water: at last, he reached a low plain overspread with salt-lakes, abounding with glauber-salts, which form beautiful chrystals in the water and leave, at the bottom, a sediment of the same mixed with common salt. Some have the wonderful property of depositing a salt, quite red and smelling like violets, consisting chiefly of glauber-salts, with a very small mixture of kitchen-salt; the chief reason of this seems to be the soil, which consists of a great quantity of sea-muscles, converted into chalk.

After traversing near forty miles over this plain and a distance of thirty more over a sandy desert, without a tree and scarce a plant, he reached the Caspian shore. In this sandy desert, he met with a plant and

a bush, peculiar to these sands; the plant is a fennel, (*Ferula*), described at the end of this volume: the bush grows six feet high, in a dry quicksand, and never has been known to botanists; as such, it deserves particular notice. I have given a drawing of it; see page 66; and also, at the end of this volume, a description; and as this plant is, by it's whole structure, visibly different from every known genus, I think I am at liberty to give it a generical name, and have called it *Pterococcus Aphyllus*. See the plate. The Kalmucks and Bucharrians call this bush, *Torlok*, and say, it is to be met with in the sandy deserts of the Kirguese, and that they use it's knotty stem, which, near the root, is about one inch and a half diameter, to make tobacco-pipes of, which it is very fit for, on account of the hardness of it's wood. The fresh roots of the bush, if split through, yield a great deal of clear gum, which in quality is almost similar to the traganth, swells very much in water, and yields a brown-yellow and sweetish jelly, and if it stands warm, will in a few days, take on a vinous fermentation. After this bush has dropped it's octagonal seeds or nuts, it remains till autumn bare and leafless, like rushes, which shoot up longer and longer, till they divide into new branches. These fall towards winter, leaving nothing but the wooden branches, which produce again young twigs, and blossom in spring. This plant I shall speak of further hereafter.



Mr. Sokolof's

Mr. *Sokolof's* description of the Caspian fisheries is of great importance, not only to the Russian empire but to other European powers, and as such I have given it to my readers in his own words.

The fishery along the northern coast of the Caspian sea, is held on lease, by the merchants of Astrachan, in which their chief wealth consists. The nearest place from the mouth of the Jaik, where this fishery is carried on, is a bay about fifty miles distant, formerly called *Bogatoi Kultuk*, (the rich bay), on account of the multitude of fish there caught. At the end of March, the Caspian sea is clear from ice. The fishery begins in April, and Mr. *Sokolof* set out on the 20th of that month, to take a view of it. He went in a boat to the said bay, as the way was impassable by land. Near the bay are five fishing towns and magazines. The bay is so full of fish, that they fish it, with success, at five different times in the year. For 100 miles to the west of this bay, there is no fishing carried on, except in the middle of summer, and the shad and barbel-fishing, with nets, in spring and autumn, there being no other fish, on account of the different species of sturgeon, with which the bay and shallows of the coast abound, owing to the water being freshened by the flowing of some rivers into it. In these places they deposit their spawn, or go up the river to pass the winter; besides, the quantity of sea-weeds here harbours shoals
of

of little fish, which serve as food to fishes of a larger species.

On the coast, as far as the fishery extends, there are watagas or magazines erected, where are salted only large fish, such as the different species of sturgeon, fewrjugs, falmon and barbel. Each wataga has boats of different sizes and structure, fit to go out to sea with a few men. The largest are manned with five men, the smallest with two, and are equipped with sails. Near each wataga, is a large vessel, with provisions, instruments and salt for salting the fish, which is brought from the Imperial magazine, at Astrachan. These vessels sail to and fro, from Astrachan to the fisheries, bring salt and other materials, and return loaded with fish, which is landed on wharfs, near the watagas. The fish is cut open, cleaned, washed, &c. on floats, which are sometimes covered, and the vessels from these floats are laden and unladen. The workmen are all hired from the interior parts of Russia and the towns situated along the Wolga; they are sometimes engaged for the whole year, sometimes only for a spring, autumn or winter-fishery. Some of them are Kalmucks of the ulufs of Bambar, who had taken up their winter-quarters about the Caspian sea, before the greatest part of the Kalmuck hordes had left this district. Each wataga employs from fifty to 120 men, as the tenant can afford. Some are engaged as steerfmen, some as rowers, some to salt the fish, some to dress

dress the roe and others to prepare the fish-glue, &c. all according to the different branches they have served an apprenticeship to, for which they have a salary, never exceeding forty or fifty rubles for each fishing-season; but the general pay is twenty rubles. Old steersmen, who have acquired more skill in the fishery, by long practice and experience, are appointed as directors, and these have better pay.

Besides these men, there are many merchants and citizens, from Astrachan, that reside here, during the fishery. These people agree with the proprietor, or tenant, and fish for him, at a certain price for all the fish they catch, using their own boats and implements. The price paid for each sewrjug, is from four to six copecs, each copec one half-penny, English; and each bjeluga, from eight to twelve copecs; but, fishes of extra size, are counted as two or more.

Besides the houses of the fishermen, near every wataga, are many sheds and covered places, where the roe is prepared, the fish-glue and back-finews dried, and all the materials kept for fishing. For the salted fish, they have caves and subterraneous ice-cellars of different sizes. These contain a wooden floor and large wooden troughs, in which the salt-pickle is prepared. On each side of the pickling-troughs are divisions, where the fish is laid after it has been taken from the salt, and is again strewed over with fresh salt; and behind

hind these divisions the space is filled with ice, in order to keep the fish fresh.

The watagas are situated in places where the sea is deep enough to carry vessels and where the shore, by it's elevation, is sheltered against the south-wind, which swells the waves and makes them lash the shore. These spots, then, are commonly high capes, where the sea forms deep bays, and from which the step is separated by rushy sea-marshes, passable only in boats. On these capes, grows as much grass as is necessary to feed the horses kept for the winter-fishery. The duties which the watagas pay to the state, are in proportion to the quantity of fish-glue and roe they prepare. Each pud of fish-glue pays five rubles, and each pud of roe, two rubles, eighty copecs.

In spring, the bay is crowded with beljugas, sewrjugs and Wolga sturgeons, at this time, without roe, coming here only to feed; but sewrjugs depose their spawn at this season, and do not return the whole year. In winter and autumn, they catch only beljugas, which collect here to spawn and pass the winter.

The spring-fishery begins as soon as the sea is free from ice, which often happens in the middle of March. Then large shoals of small fishes approach the coast; of these, one little fish, (*Cyprinus Griflagine*), called, in Russ, *Obla*, about an inch long, is the most favourite

vourite food of the beljugas, who, soon after, follow them in great multitudes. As soon as the obla appears, they catch a great many of them, in drag-nets, put them alive into reservoirs and preserve them as baits for the hooks, as the beljuga bites at nothing so soon. When the beljugas enter the bay in troops, which is generally a fortnight after the appearance of the obla, the fishery begins. If this time is passed over, the tenant loses his advantage. Then the fishers are at work night and day, and as soon as they have brought one boat-load ashore, they push off for another. In brisk sea-gales, there is the best fishing, for it has been observed, that such gales drive the fish upon the coast; but if the wind blows from the land, it always impoverishes the fishery. In good seasons, a boat will catch upwards of fifty large fishes in two hours.

The beljuga is caught here with lines and hooks. The tackling consists of seventeen ropes, 144 feet in length, to which they tie 125 cords, each cord ten feet long, with hooks fastened to it, at the distance of eighteen inches from each other. Thirty of such tacklings compose what they call a *Snast*, which consists of some hundred fathoms of line. Between every snast, is tied a stone, weighing many pounds, and also a buoy of dried reed-mace, which floats on a rope fourteen feet long. To all this tackling, are fastened two anchors. Such an anchor consists of two split pieces of a tree, each of which has a strong branch at one end,
that

that gives it the form of an anchor, and this is loaded with bricks, to give it weight. Each anchor has a cable of about twenty-fathoms long. When the anchors are cast, they tie an obla to each hook, and the whole is thrown into water three or four fathoms deep, so that the tackling lies at the bottom, giving the baits a liberty of swimming; and, the beljugas greedily swallowing them, are caught on the hooks; and as the anchors keep the tackling in it's situation, the largest fish cannot escape. The whole is raised twice a-day and drawn, with the fish, into the ship. When taken off the hooks, to prevent their fainting by lying together, a rope is drawn through their gills and they are let down the ship's side into the water, in order to be brought ashore alive. When ashore, they are drawn by hooks upon a scaffold, and cut up one after another. First, they split the head with an ax, then cut open the belly and take out the entrails, roe, glue-bladder and, last of all, the dorsal sinews. The lower part of the abdomen and the bowels, are thrown away, but the wide and fleshy snout is salted, and sold at five or six copecs each. A middling sized beljuga, has a stomach that will contain two whole sea-calves or seals, besides a great number of small fishes. In spring, the beljuga has seldom any roe, but most are milters. After having taken the roe out, they tear out the glue or air-bladder, which occupies the whole back, put it into a pail and prepare to extract the ising-glass; they next cut open the cartilages of the back, draw out the
back-

back-sinews, wash them and hang them up, over poles, to dry.

When all the bowels are taken out, the fat, which lies plentifully about the milt, in milters, is scraped off with knives, collected in a pail and afterwards boiled and cleaned. This fresh fat is good-tasted, and may be used instead of butter or oil. In Astrachan, it is sold from forty to fifty copecs *per* pail.

The fish, thus cleaned, is washed and carried into the above-mentioned caves, where it lies for twelve hours, or more, in a strong pickle or brine; it is then put into boxes and covered with salt. Beljugas are here caught of an enormous size. In the winter, 1769, one was taken seventeen feet in length and it weighed seventy puds, that is upwards of 2500 lb. from which they took twenty puds of roe, or 720 lb. The largest sewrjug never exceeds nine feet in length, from the point of the snout to the end of the tail-fins. Large beljugas will swallow young seals, geese and wild-ducks, whole.

Soon after the beljuga fishery is over, and often before, that of the sewrjug begins. This does not last above a fortnight and is but once a year, as they come up into the fresher water to spawn. This fish is caught in nets and, if a favourable gale blows, they come in such quantities, that the vessel will not contain the draught,

draught, but they must be brought to land by ropes. Each wataga will catch, in a short time, sixty or seventy thousand; but if contrary winds blow, only half the quantity. This fishery is important on account of the roe, or cavear, which is prepared two ways; one is called granular, the other bag-cavear. The granular, is pressed through a coarse sieve, to cleanse it from the skins and blood-vessels, and then salted in troughs. One pud of roe, will take five pounds of salt. It remains in these troughs about an hour, is then spread over fine sieves, that the superfluous brine may drain away, and after this, it is barrelled.

The bag-cavear, after being cleaned from the skins, is put, for half an hour, into strong brine, then taken out and drained, by laying it on sieves; after this, it is put into pointed bags, like those used in apothecaries' shops, each bag containing eighteen pounds. In these bags it is squeezed till all the brine is out, and then put into barrels and trod down, by a man in leather stockings; afterwards, the casks are closed and well done over with tar, to prevent any of the roe running out. Bag-cavear, is sold at two rubles the pud; the granular, at one ruble, eighty copecs.

Fish-glue, is made from the internal membrane of the air-bladders. These are cut open lengthways, laid to dry a little in the sun, the internal membrane then
separated

seperated from the external, pressed with heavy weights, in a wet cloth or mat, one whole day, then cut into pieces, rolled up and dried in the shade. Sewrjug-glue sells, at Astrachan, for thirty-five rubles the pud; beljuga-glue, for twenty-five or thirty-rubles. Sewrjugs, they salt and dry in the sun, for the table.

When the fishery is over, the cavear, glue, &c. and salt-fish, is brought to Astrachan by land, and there stowed away in cellars, till sold. The proprietors of the fisheries do not sell retail, but dispose of their whole property, or employ the merchants of Astrachan to sell it by commission, at so much a hundred; not the hundred weight, but 100 pieces, according to the size of the fish: each fish from eighteen to thirty-six inches long, from eye to tail, is reckoned as one piece; those under eighteen inches count two for one piece; a fish of thirty-six inches, counts as two pieces, thirty-nine for three pieces, forty-two for four, and so on. A hundred such beljugas, at the first hand, will sell for seventy or seventy-five rubles. Sewrjugs, without being measured are sold from ten to fifteen rubles *per* hundred. Barbels are valued at forty rubles per 1000. All kinds of sturgeon, caught in rivers, are considered as better and more delicate, and will sell ten *per cent.* dearer than sea-fish. The dried back-finews sell, at Astrachan, for one ruble and a half *per* pud; but, when the fish is sold wholesale, these finews are given in, according to the quantity.

In the winter-fishery, they break the ice in places where they fish, bring to the wataga what they catch, on sledges, and send it, frozen, to Astrachan, where 100 such fresh beljugas, will sell for 120 rubles. Shads weigh, here, eight puds and barbel one and a half. The former are uncommonly fat in summer and are then called *Sbarkoi Som*, (hot shads). They like it's fat hinder-parts and tail, but the head and fore-part is thrown away. Barbel-roe is also thrown away, but they make a kind of bad glue of it's air-bladder.

Tjumen. My eyes getting better I fat out, in the middle of December, and, after travelling about 170 miles, reached the town of Tjumen, situated on the Tura, on the 19th. This town, after being destroyed by fire, is new-built, in regular streets. Here I had the pleasure of conversing with Dr. *Lepechin*, a member of the Imperial academy of sciences, for some hours. He resolved to pass his winter here. At night I continued my journey over the Tura, near the burial-place of the famous *Steller*, well-known for his tour to Kamschatka. In nineteen hours, I reached Tobolskoi, a distance of 191 miles. This road is very well regulated, for, at every twenty-four or thirty-six miles, there are places erected for the accommodation of travellers and changing of horses. The district between Tjumen and Tobolskoi, which I travelled over, is an open plain, with here and there a small wood.

I shall

I shall not take up any time in describing the city of Tobolskoi, however important it is to the government of Siberia, it having been fully done by *Gmelin*, in his tour to Siberia. The few observations I made, relate to natural history, and will be better spoken of in another place. I met here with Captain *Iffenief*, who, after having made his observations on the transit of Venus over the sun, at Jakuzkoi and other geographical business in Siberia, proposed passing the winter here. His Excellency, Chevalier *De Tschitscherin*, governor of this place, shewed me every civility in his power, and provided me with every thing necessary for the prosecution of my journey.

‘ Tobolskoi is the capital of Siberia, has an arch-
‘ bishop and was built in 1587, by the government of
‘ Russia, just at the confluence of the Tobol with the
‘ Irtysh, in the room of the ancient city Sibir, that was
‘ burnt down, and stood twelve miles lower down the
‘ river, on the right-hand shore of the Irtysh. Sibir,
‘ by it’s ruins, seems to have had the form of a fortified
‘ camp and to have been built with unburned bricks,
‘ like the Bulgarian cities. This part of the country
‘ was the principal seat of the Tartars, before the Rus-
‘ sians added that vast territory to their dominions.
‘ When *Yermak* had penetrated as far as the Irtysh, in
‘ 1582, and driven from thence the Khan of Siberia,
‘ Sibir was demolished, and the Tartars of those parts
‘ were in general dispersed. This *Yermak* was a rob-
‘ ber,

‘ber, who, at the head of some thousands of Cossacks,
‘pillaged the cities on the borders of the Wolga and
‘the Caspian sea, and took possession of them, but
‘finding himself not able to keep them, made an offer
‘of his conquests to the Czar *Ivan Vassilievitch* and
‘desired his assistance. *Yermak* obtained it, and also
‘a pardon for himself and his people, and since this
‘time the Russians have had possession of Siberia.

‘The present Tartars of Tobolskoi, are descended
‘from the ancient Tartars of Siberia, who kept their
‘ground. They take their name from the Tobol,
‘both sides of which they occupy, from the Kirguese
‘frontiers to the mouth of that river. Their villages
‘contain from ten to fifty farms, and they are in num-
‘ber about 4000 males. They are Mahomedans, and
‘resemble altogether, in their manners and customs,
‘the poorer sort of the Tartar villagers of Casan.
‘Their poverty keeps them from luxury and de-
‘bauchery, and few have but one wife, as a marriage-
‘ble girl fetches from twenty to fifty rubles.’

I remained in Tobolskoi from the 20th to the 30th
of December, when I proceeded on my return, which
was rendered very disagreeable by a violent hurricane
and snow. I sat out with Dr. *Lepechin* for Catherine-
burgh, at the distance of 240 miles; we arrived there,
in nine stages, on the 1st of January, early in the morn-
ing, and I continued my journey alone the same night,
sixty

sixty miles further, and took up my winter-quarters at Ticheljabynskaja, which I reached in the night of Jan. 2d. 1771.

Hitherto the district of the regency of Orenburg and the adjacent provinces had been the object of my enquiries; but they having all been visited and examined either by me, Dr. *Lepechin*, or Professor *Falk*, the chief end of the Imperial academy of sciences was attained and the few remaining objects, worth notice, would be inspected on our return, or by the mission of some of our learned assistants. Much more, however, being to be done in the natural history of these dominions and the extensive kingdom of Siberia, and the northern districts of the empire promising many discoveries, having not yet been thoroughly explored, and many accounts of *Gmelin's* and *Steller's* tours through Siberia, having been lost, the Imperial academy agreed to a plan, formed by me and Dr. *Lepechin*, which was, that he should travel, on his return, to the northernmost districts of the regency of Casan, the whole of Archangel and the coasts of the White Sea, and, that I should extend my journey even beyond the districts of the sea Baikal, to view and describe such places, which had been slightly passed over by the late Mr. *Gmelin*, or had undergone an alteration since he was there, especially the distant Siberian mines and manufactories, and the inhabited southern frontiers, to collect carefully every remarkable plant, and do the same in

Zoology, thus fulfilling perfectly, what preceding travellers had accidentally only taken up in their way, and whose labours were devoted to botanical views and, of course, but little had been transmitted to the scientific world. To accomplish this plan, it was necessary not to lose time, but to dispatch the most learned of my assistants to different districts. On the 24th, then, of February, I sent Mr. *Basil Surjef* through Tobolskoi, to the northern town Berezowa, situated on the Ob or Oby, from whence he was to proceed, in the beginning of summer, as far as Obdorskoi Ostrog, down the Ob, and, if passable, as far as the Icy Sea.

In the middle of march, Professor *Falk* arrived here from Orenburg, with the last sledge, having fixed upon a Siberian tour and wishing to consult me on the subject. He had made, along the line, a very pleasant journey, but a very dangerous one, and came here a fortnight later than his assistant Mr. *Georgi*, celebrated by his translations and other works of merit, and who came the straight road over the Ural. The arrival of these gentlemen made my residence, in Tscheljabynskaja, more agreeable than it had hitherto been, and I had only to lament that the sudden arrival of spring obliged us to part company.

Capt. *Ritschkof*, who had been with me most part of the winter, seemed disinclined, on account of his delicate constitution, to travel with me into Siberia, and
requested

requested me, to procure leave from the academy at Petersburg, to return home, taking some districts of the Ural in his way, that had not been visited. This leave was obtained; but, it being just determined to dispatch a body of light-horse, from the fort Orskaja, under the command of Colonel *Trautenberg*, into the Kirguisian step, in order to pursue the removed Kal-muck hordes, this excellent opportunity thus offering itself, Captain *Ritschkof* could not withstand, and as he wished to accompany them, I consented to his going. He went, and the success of his difficult journey, with his observations, may be read in his own journal.

I prepared for my own journey, but, before my setting out, thought proper to pen down some general account of the province of Isetskoi, where I wintered. Of all the parts that belong to the regency of Orenburg, this is, incontestably, the happiest for fertility and tillage, and tolerably well peopled; yet, not so much as it deserves for the richness of its soil. They reckon here 57,391 male inhabitants, among which are 4,352 that trade and pay no head-tax. The different Baskirian ulusses, settled eastward from the Ural, consisting of 4,118 habitations, belong to this province, besides 456 habitations of Medscheraks and Tartars. If this population is compared with the extent of the province, which is near 225 miles long and broad, it will naturally occur, that even this great number of people is not sufficient to cultivate the country. At present, they

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sow,

sow, annually, near 100,000 dessatins of land, each dessatin one hundred square fathoms, and they commonly reap ten-fold of what they sow. Rye and wheat are the chief grain here, but they sow, occasionally, barley and oats, not only supplying a great part of the line of Orenburg, but all the manufactories situated on the Ural and part of those of Catherineburg. In the general failure of the crops, in 1769, when even in many places of this province, they scarce reaped as much as they sowed, on account of the long, dry weather; yet the crops here were so great, as not only to supply the above-mentioned places, but also the adjacent provinces of the whole regency or government of Orenburg, and absolutely saved them from famine.

Besides the great growth of corn in this province, the soil, which is black and rich throughout, even to the depth of two feet in some places, yields not only the finest grass, but is fit for gardens. All common vegetables prosper here exceedingly, especially turneps, which grow to an enormous size. Yet, through the negligence of the inhabitants, here are only sown, coleworts, turneps and parsneps. They cultivate a few hops, but these growing so plentifully wild, every where in the Uralian mountains, raising them is unnecessary. Flax and hemp is also sown here, but not being a saleable article, the farmer never sows more than is necessary for his own use. In a garden, in the midst of a desert, which has been many years abandoned,

done, I saw, with astonishment, spontaneously growing, the mallow-flower, the turnsol, the French marigold, (*Tagetes*), and the holy thistle. Garden strawberries and the dwarf-cherry, (*Cerasus pumila*), grows wild every where, and shews, that the soil is fit for any production that can be expected from a temperate clime.

There are no other manufactories in this province than a bad hat, and a glass, manufactory, some few tanneries, two brandy-distilleries belonging to the crown, and the iron-manufactories that have been mentioned.

The game here, is not of any great moment: two sorts of martens are caught and some bad wolves and foxes. When the Kirguese are peaceable, sportsmen go, with the leave of the commanding officers of their step, and return loaded with the skins of ground-foxes, wolves, beavers and otters. In the step of Isetskoi, they catch plenty of ermines of a fine size, and, during my stay here, the Tartars caught a sable, not far from Tscheljabynskaja, which they looked upon as a great rarity.

In summer, there is plenty of water-game, and, in winter, a great abundance of wood-cocks and wild-geese. The mountains produce noble birds of prey, a fine species of falcons and sparrow-hawks. In the
woods

woods about the Isset, we meet, sometimes a species of sparrow-hawk, (*Falco palumbarius*), which grows quite white when old and is much prettier and larger than the common ones.

On account of the numberless lakes, here are vast quantities of fish; the common sort are sold from twenty-five to thirty-five copecs *per* pud. If the bottoms of the lakes are sandy, the place is crowded with the *Cypr. Idbarus*, which are cheaper still. They catch now and then a kind of Siberian trout, but they have neither bream nor crabs, though they are found in great plenty in the Jaik, almost up to it's source.

I must not omit speaking of the air, which about the mountains is wonderfully healthy, and it's inhabitants live to a great age. Many countrymen are here met with, 100 years old, and I saw a soldier, at Troizkoi, who was 120; but the low part of the province, among the salt morasses and foul lakes, is subject to fevers and scorbutic disorders; not so much, however, as to shorten the life of the inhabitants. The bitter salt-dust, dispersed by the wind, causes great inflammations of the eyes and boils upon the eye-lids, and, in this district, the air-plague rages very much among horses and destroys many, but does not infect the people.

During the first week of March, we had a continual thaw and the air was so mild, that on the 24th, (Holy Thursday),

Thursday), many of the common people, bathed themselves, (according to an old custom derived from Slavish heathenism), in the river, though covered still with ice. They say, that, in former times, this was the feast of *Kupal*, the god of waters. So, on the Thursday before Whit-sunday, the country lasses honour, even now, with poetical songs and garlands, *Lada*, the ancient goddess of love, and her son *Dida*, their feast having been celebrated on that day, in the times of heathenism. From the 24th to the 27th, fell a great deal of snow, but, directly after, the weather became so warm, that the Mjals was freed from the ice by the end of the month and over-flowed it's banks. On the 7th of April, the waters sunk and I thought proper to proceed on my journey, before the snow from the mountains swelled the rivers again. Several wandering birds appeared on the 19th of March, such as jackdaws and cranes, and soon after, to the 24th, swans and all sorts of ducks; and these, after the last snow on the 28th of March, were followed by geese, starlings, larks and many wood and water-fowl. On the 4th of April, came the cuckow, also a species of buntling, and a bird called *Fringilla calcarata*, which runs about the fields in numbers, and is no where seen but in Siberia. On the 14th of April appeared the first insects.

On the 16th, I left Tscheljabynskaja, which is a fort that was erected against the troubles among the Baskirians

rians and Kirguese. The place is fortified in the usual mode with timber-works, and it's streets are regular; it is situated on the steep and rocky bank of the river Mjafs, has a stone-built and a wooden church, and many good public and private buildings. Most of the dwelling-houses are built in the country stile, and the occupation of most of the inhabitants is husbandry.

The night before our departure, on the north side of the river, I saw the whole horizon in fire, owing to the step which had been burning three days; and, had not a heavy rain quenched the flames, the town would have been in danger, as the wind blew right towards the suburbs. Such step-fires are very often seen in these districts the whole latter half of April.

The first night we lay out on the field, but, at the next port we reached, we heard they had lost several horses, and examining them the people told me, they discovered a deep-seated boil on their buttocks, hidden under the skin, in which there was a short worm, as thick as one's finger. They described this worm as too large for one to suppose it to be the Swedish *Curculio parapletticus*, yet the circumstances, that caused the boil, were here the very same.

As soon as we crossed the river Mjafs with our horses, I continued my journey along it, where are a number of villages, but the road struck off through a hilly district.

district. Our eyes were charmed the whole day with the Siberian wind-flower, (*Anemone patens*), that grew every where, where the lands were not very salt. It is here and throughout Siberia called *Wetriniza*, (wind-flower), and is well known by the countryman, as the young peasants often raise false boils on several parts of their bodies, with the bruised herb of this flower, in order to be declared incapable of military service, when there is any press or levying of soldiers. In want of this herb, they make use of a kind of sharp garlick, which will raise boils, but which are readily cured again, by covering them with wax. The peasants also use a decoction of the wind-flower, against all convulsive complaints of their children. The fields were also embellished with the pheasants-eye, (*Adonis Apennina*), and the *Adonis verna*, which blooms sooner. Both species here go by the same name. They preserve the roots as the most important of all domestic remedies; and petulant girls use it occasionally by way of revenge to bring on miscarriage.

In my way on I crossed, on the 21st of April, the river Kurtamysch, on the banks of which, stands the market-town Kurtamyschefkaja, on an open, sandy hill, round which, the river makes an extensive bend. This town was erected twenty years ago, with all the villages that belong to it. It has a commissioner and a town-house, subordinate to the regency of Iserskoi, and to it's jurisdiction belong twenty-four villages, situated

situated on this river and on some little lakes, consisting of 1850 men, the market-town Taloffskaja, with its dependency, 2365 men, and Kaminskaja 1935 men, the last two add 243 noble families, so that the male inhabitants of this whole district amount to 6393. This place, besides the town-house and a wooden church, has only sixty-eight dwelling-houses. Before the line of Ui was erected, this was a fort, and it is still surrounded with the old works. The district is not very good for husbandry, on account of the saltiness of the soil, the best soil growing barren every three or four years, and wheat never thriving here at all. Formerly, here were a great many elks in the hilly woods, but they have deserted the place since it has been inhabited. They catch, however, a great many ermine, foxes, &c. sometime the race-hare, (*jaculus*), and sometimes stags, that wander here from the Kirguisian step.

The low-lands, are abundantly covered with a nitrous salt, which lies over the moist ground, puffed up like foam. It contains a mixture of glauber-salt and so much alkali, that it effervesces with acids. In general, all the salt-tracts here are so impregnated with a bitter and common salt, proportionably nitrous, that it may be squeezed from the ground in spring, in form of a spongy, very moist, white paper foam, which in long, dry weather breaks down into a snow-white flour. The cattle gather round this salt in great quantities, yet will eat but little of it, it having a urinous taste.

Having

Having sent on my waggons to Kaminškaja, when I had examined this salty district sufficiently, I followed them, and was there on the 22d of April. This place consists of 130 houses of substantial families, and lies on an arm of the Tobol, which abounds with all sorts of fish, particularly barbel and roach, which are often near 18 inches long. In winter, this place is very watry and abounds with water-fowl, particularly large, white cranes, of which further mention shall be made. With all other sorts of game the country abounds, and is rich even in elks and wild boars. Ducks are here taken flying, in such nets as I described were erected in other parts to catch geese, and they also make snares of horse-hair, fastened in rows on a rope extended over the surface of the waters, in which ducks and other water-fowl are abundantly caught. The country-folks here, by a strange superstition, incense these snares with the curled galls, that form themselves on worm-wood and southernwood, idly conceiving that it will prevent evil eyes bewitching the snares.

I sat out from this place in order to cross the Tobol, at twenty-six miles distance, but found that a storm, the day before I arrived, had sunk the ferry-boat and they had only a slight raft, much too slight to carry my two heavy waggons; besides, I met with a party, on my way, of 500 dragoons, which were marching against the Kirguese, who had lately committed several robberies and seized some travellers, and as I could not
get

get a sufficient escort at this place to pass safely, I returned to this, determining to proceed by another route. But, to add to my mortification, one of the gentlemen with me, Mr. *Sokolof*, was attacked with an ague; my draftsman, who had sunk into a lowness of spirits some months past, was now worse, and an attendant, who had been afflicted with the scurvy, all the winter, fell sick, and another had been thrown from a wild, Kirguisian horse, and lay in a very shocking and shattered condition; I could proceed only, therefore, in that slow way which the state of my patients would admit.

On the 25th of April, I proceeded down the Tobol and picked up, in my way, a species of a little, grey dormouse, with a black stripe on it's back, and a very long tail, (*mus subtilis*), very common in the birch-woods, near this place. This little animal falls asleep in the least cold, and creeps into small chinks of the earth or holes in the ground, where it rolls itself up like a ball, till enlivened again by the warmth.

On the night of the 27th, we had a sharp frost, so as to freeze the water, and yet the flowers and flower-buds stood it well; for the plants in this climate agree well with it's different changes of weather. Downwards, along the Tobol, there are many villages, and the district is as much inhabited as the most populous district in all Russia.

About

About fifty miles below Kaminskaja, on the river Tobol, is situated the hill called Larew-Kurgan, a hill of an enormous height, raised by hand. But no certain tradition has been left of it. It appears doubtful whether it is not a monument of some extraordinary event, or the tumulus of some person of distinction, erected by the ancient inhabitants of this district. The circumference of the hill is 480 feet, and is at sixteen feet distance encompassed with an over-grown, circular bank, ten feet and a half high, and a ditch, which, in it's whole circuit, measures 700 feet. The form of this hill was conical, pointed at top, and was higher than at present, but a certain prince caused the top to be taken off and a deep pit to be dug into it, in order to discover it's contents; nothing, however, was found. The whole hill is richly covered with grass and stands near a village, where they are erecting a stone-church, but as they are obliged to fetch their mortar a great way, it goes but slowly on. The inhabitants have here begun to erect their ovens with brick instead of those which they used to build with clay, and which so often fired their malt-kilns. The ovens they now build are well vaulted, with vent-holes on the sides, just underneath the roof, and a chimney closed at top, having a smoke-hole on each side. Through these smoke-holes no spark can get, so as to set fire to the straw spread about it, and the whole kiln is thus preserved from taking fire, owing to the chimney's being closed at top.

On the first of May, my patients being better, I crossed the river Ik, which is here 105 feet over, and deep. 'The villages are small, but stand, in this country, very thick, and a commissioner, who resides in one of them, has the command of twenty or more, according to their situation. They sow here a great deal of rye, wheat, oats and millet, which is bought up by commissioners from the crown, and carried away in barges, in summer-time, and on sledges in winter.' On the night of the 2d. we had a violent storm, accompanied with a fall of snow, which covered the ground a foot thick, and interrupted my journey, till the next day. We had scarce travelled twenty-three miles further, but my attendant, who was so ill with the scurvy, grew worse. The great frost had done him harm, and this added to clandestine intemperance, carried him off, with a mortification in his bowels. I gave him every assistance in my power, but it was all in vain, he expired on the 3d of May, when he little expected it. I left some of my people to bury him, and continued my journey the same afternoon.

Thirty miles lower down the Tobol, is a considerable brandy-distillery, erected twenty years since, by two merchants, but belonging now to Count *Schurwalof*. Above three hundred houses are here built along the Uk, which empties itself into the Tobol, and there is a fine wooden church and mansion for the director, with a garden, 'compting-house and store-houses.

Opposite

Opposite to this are the distilleries, one of which has ten tubs, forty common coppers, three alembics and several receivers; another, thirty-five coppers and another thirty-one, with sixty-three tubs, and each tub two receivers. Each tub contains ten tschetwerts of malt, mixed with a fifth or seventh part of oats or barley. The common coppers contain forty-two Russian gallons each, and are all filled with the wash of one tub, and these distillations come round in succession once in four days, of course the business is carried on without interruption; 'so, that if thirty coppers of forty-two gallons each, are filled from one tub, that holds ten tschetwerts, we may easily know what a tschetwert is.' Near each distillery is a large copper, from which the hot water is led by pipes into the tubs; and here are granaries and a large malt-kiln. They distill here from 30 to 40,000 tschetwerts of malt, which is conveyed here in winter, and from each tschetwert, they draw three or four gallons of Russ brandy or spirits, which always goes through a second distillation. A great deal of corn is raised about this place, and a number of people are constantly felling wood, &c. They cut the wood here very imprudently, for one may go through a tract of two or three miles long, and not see the vestige of a tree left, except the roots. In the still-houses there is such a thick vapour, that a stranger cannot stay a quarter of an hour in them, without being intoxicated, and the vapour is so spirituous, that it might be kindled with a light. I endeavoured to per-

suade the proprietors of the loss they sustained, in passing their spirit through a second distillation, in which it loses a third of it's strength, but it was to no purpose; they said it was strong enough, and were unconcerned at the loss: but, it should be considered, that the loss is not only to them, but to the country at large, as it wastes a considerable quantity of corn.

The people whom I left to bury their fellow-traveller, joined me on the 5th of May, and we sat off the following day together, early in the morning, and after travelling 225 miles past many villages, that contained nothing more remarkable than what I had seen before, and many tumuli. I found myself in a district of the Ischimian step, full of uncommon large lakes, and, therefore, abounding with water-fowl, and particularly that large species of white cranes, of which I was desirous of knowing some particulars. I resolved, therefore, to stay a couple of days in this place, Krataja, and to send out for some of these birds. One of the lakes in this step is twenty-two miles long, and seven miles broad. All of them are very full of fish and feed great quantities of water-fowl, which, as the inhabitants are thin, build their nests here in tolerable safety. About one of these lakes, called *Mangut*, which is almost inaccessible, on account of it's swamps, are many wild boars, and about the lake Saltaim have been built, within these ten years, several villages, colonized

nized by persons who have been transported into Siberia for little misdemeanours.

On the 11th, the persons I sent to bring me some of those white cranes, returned with several, (*Grus Leucogeranus*). It was with difficulty they could get them to stand so as to have a shot at them, for these birds are much more cautious than other cranes, and if they once see a man, even at the greatest distance, soar up into the air with a music equal to that of the swan. Their height, standing upright, is five feet, and this enables them to see a great way, and they are so timid as to suspect every, the least, motion of a reed. It is, therefore, necessary that a gunner should approach them quite covered, whilst they are feeding on small fishes on the banks of the lakes, which is their customary food. Timid as they are before men, they are bold enough against dogs, whom, as soon as they see, they will attack with great fury forgetting the lurking sportsman, who is with them. If any man approaches their nests, they are equally bold, will never fly, but protect their abode to the last, and, on account of their large size and the sharpness of their bills, are formidable enemies. They build their nests in solitary, rushy morasses and fens, on hillocks of sea-weed and twisted rushes. The male and female guard the nest by turns. They lay but two eggs, which are as large as a goose-egg and spotted with yellow, green and brown. This was just the season of their breeding. In one year's

time, the young crane is almost as large as the old one, and his body is covered with ochre-yellow feathers, whiter under the belly and about the head, and his bill is blackish. In the second year, he becomes white and keeps only the outermost wing-feathers; the head grows red above the eyes, where there are no feathers, but only small, red hairs. At this time, the bill-skin and feet are red. and the neck continues yellow, but deeper and more fiery, which, as the bird grows older, becomes white as a swan. This bird flies from over the Caspian sea, in the spring of the year, commonly single and very high in the air, but is no where so frequently to be met with as are the common cranes.

The next thing I enquired for, was the flying squirrel, and sent some hunters abroad into the birch-woods in search of some. This wonderful little animal, (*Sciurus volans*), is common from the Uralian mountains, throughout all northern Asia or Siberia, where there are any birch-woods, with or without firs; is always seen on high and builds its nests in the trunks of trees, from whence it does not go out but at twilight or night, to feed upon the birches, its food being the fruit that grows upon the birch, small and brown in winter, blooming in spring and filled with seeds in summer, thus serving as aliment to this animal throughout the whole year. Where there are fir-trees, it eats their buds and its entrails have, then, a very resinous smell; but, otherwise, they have a birch-smell. It
feldom

seldom runs upon the ground, and yet is in the habit of dropping it's dung at the bottom of those trees where it lives. When it leaps from one tree to another, it spreads out the folds of it's fur, with all it's feet, which from the fore-feet to the ham, may be extended on both sides by a bone, like wings, with which it will quiver in the air, something like flying, and can direct itself in it's flight by it's woolly and broad tail. In this manner it will fly or leap to the distance of 140 feet, not horizontally, but in an oblique direction downwards from the top of one tree to the middle or trunk of another. When it climbs the birch-tree, it is scarcely distinguishable, by it's white-grey colour, from the bark of these trees; thus has Nature wisely protected this animal from nocturnal birds of prey. This is the season in which the flying squirrel drops it's young; they commonly bring forth only two, sometimes three and but rarely four: they are first callow and blind. I kept a nest, that was brought me, a long time. The mother sat the whole day over her young ones, and wrapped them up in her wing-skin; but at night, as soon as the sun was set, she covered them with moss and went to search her food. The young ones grew very slowly, and did not get their hair and fore-teeth till after the space of six days. They remained blind to the thirteenth day, when I found them all dead, and one almost devoured by the mother. If these animals, when brought to me, were but two days old, and, by their size, they appeared to be of that age, they must

remain blind for a fortnight after their birth, which is not the case with any quadruped we know as yet. The mother died soon after, notwithstanding all attempts were made to save the little creature's life. I might have had better success in winter, but then it is hard to catch them. They often fall into those bruising traps, set on trees to catch squirrels with.

On the 15th of May, the heat of the weather was equal to 105 deg. and a half of *De L'Isle's* thermometer, had increased one deg. and a half within the last three days, and was attended with a violently hot, southern storm, that blew hard and carried with it a great deal of salt-dust, which hurt our eyes much. Towards night, we heard a great bustling and the noise of a vast quantity of water-fowl, such as swans, ducks, herons, divers, &c. which continued till midnight. This was the second prognostication we had, by aquatic music, of an approaching frost; for, after twelve o'clock at night, the wind changed to the north, and blew all the next day so cold, that we were obliged to look for our furs; yet, we found in bloom, the oalerian (*Valeriana officinalis*), the chiehling vetch, (*Lathyrus pisiformis*), the sky-flower, (*Cineraria palustris* & *Alpina*), and several little bell-flowers; and, the more southward we travelled, the more plants we met with in bloom.

Having

Having given no description of a particular way of catching sturgeon, in the river Wolga, with a tackling they call *snast*; as I met with the same here, in the river Irutsh, under the name of *samolowi*, somewhat different from the snast of the Caspian sea, the reader shall have it now. The whole consists of a bast rope, well tarred, between twenty and forty fathoms long, on which they fasten, at the distance of six inches from each other, if for small fish; but at twelve inches, if for large fish, small cords, likewise besmeared with tar; on these strings, they tie strong and sharp hooks, four or five inches long, greased with tallow to prevent rust; in the middle of the curve of these hooks, is a line of horse-hair, twisted, having a small float at it's end, of willow-bark, as light as cork. After each tenth hook, they fasten a stone on the last rope, sufficient to sink it, and, at one end, a wooden anchor to secure the whole, at the other, a rope with a basket, or some other thing that will float and serve as a buoy. In this state, the tackling is cast into deep places in the stream, letting the anchor first down, that the current may not carry it off. By means of the floats to each hook, the hooks are kept from touching the bottom, and the sturgeon and husos, which rove about the bottom, beating the water with their flanks and tails, are sure to hook themselves in one part or other: so wounded, they are more agitated, beat and lash the water more, and are, by this means, hooked in several other parts, so as not to be able to escape. The fishermen draw up these

these ropes every day, take off the fish caught, and replace the rope in the water at night. This fishery is continued all the summer. In the Wolga, they stretch such ropes across the whole arm of a river; and, in the Caspian sea, bait the hooks with a small fish called an obla, which bjelugas bite at, and are caught by the throat, as I have had occasion to speak of.

In the banks of the Irtysh, are sometimes found, teeth and other bones of elephants, brought forth by the water. 'These have lain buried in the earth a long time, and denote some extraordinary change in it, as I shall speak further of hereafter.' I met here, also, with a species of large, yellow-headed lark, (*Calandra*); they are fond of flying about the road, singly, but do not fly high nor sing near so well as the field-lark, but, like the latter, build in the grass and feed upon grass-hoppers and other small insects.

On my arrival at Omskaja, a fort on the river Irtysh, on the 17th of May, I went to Major *Stanislasky's*, to see some maps that had been made of Siberia, convinced there were such things in his possession, left by the late General *Springer*, who died just before we arrived, and who was a lover of the science of geography. After waiting two days I was informed, that, without special orders from Petersburg, I could not be shewn any of them. Notwithstanding all I could say, I could not get a sight of those which I wanted to see, and from
this

this I collected that the commanders here disliked my tour and the business I was entrusted with. Indeed, till the day of my departure, I could obtain nothing but an order for a change of horses at different places, and these, the worst in the garrison; and, in this order, they left it to the option of those officers who commanded the forts I was to travel through, whether they would supply me with regimental horses or not. I dreaded, therefore, every possible obstacle, and this cold and ungentleman-like reception the more surprized me, as I had been, every where else, loaded with all imaginable civility and kindness, by the governors and commanding-officers where I passed. I considered this, however, as a new proof of the old truth, that the God of War is no friend to the Muses.

I remained, however, at Omskaja, to repair and re-fit till the 22d. Omskaja has it's name from the river Om, being situated near it's mouth into the Irtysh. A new fort has been here erected by Lieutenant-General *Springer*, the old one having been entirely decayed, and is well fortified, according to the rules of modern fortification. It was begun in 1768, and in great forwardness when I was there. Within it, is a handsome mansion for the governor, with a stone foundation; a court-martial and a military store-house, with artillery; a house for the chief priest, and several streets of well-built houses; a fine stone-built church, a military-academy, a house for the reception of strangers of distinction

tion, and one for the protestant-preacher of the Siberian division, besides other houses for officers, &c. On the Irtysh lies, within the fort, the magazine of provisions, and, in the chief square of the fort, are several fine fountains. In short, it has the appearance of a fine city. Part of the old fort will be demolished with the old cathedral and the church-yard only left, where a monument has been erected to General *Springer*.

Forty miles from Omskaja, where I arrived on the 23d of May, is a guard station, where a new fort is built, and the place is colonized with a number of exiled Tartars, sent here to carry on the works at Omskaja. Near this post, an English officer, who formerly commanded here, has made a fine kitchen-garden. The sand, taken out from the ditch of the redoubt, is mixed with *Tellinæ* muscles, half calcined, often met with on the higher shores of the Irtysh, but never in the river itself, and are incontestably a marine production. But the most remarkable circumstance is, there being only this single species of muscle-shells, to be found throughout the sandy steps upon the Irtysh, without any other trace of petrified sea-bodies; and, it is no less worthy the notice of a naturalist, that they are found abundantly, quite near the surface of the earth, whilst the borders of the river, which consist of sand and loam, and the other steps, wherein they are found, are six, eight, nay even ten fathoms above the highest level of the water.

I never

I never met, any where, with so great a number of water-swallows, as about the high-shores of the Irtysh. In many places their holes and nests are so near each other, that if one stands on the brink of the shore and treads a little hard, they will swarm out in crowds and hover about like flies. Here, also, builds the house-swallow her nest, with the water-swallow. The former makes a hole in the land, but not so deep as the latter. The house-swallow's hole is merely large enough for her nest. These two species of swallows, are found here in abundance, but they do not like to mix. One spot shall be found full of the nests of the water-swallow and another of the house-swallow.

In our way from Omskaja, we passed many scattered tumuli, about ninety miles from that place; these tumuli are not raised so high as in general; they are flat and of mean appearance, and the body not buried more than eighteen or twenty inches deep: the bones, however, that we found, were quite sound. The head lies to the west and they are, probably, the graves of the idolatrous Barabynian Tartars. Valuable things are not commonly found herein, but, in some, they have found copper, and in some few, better metals.

The high, sandy shores of the Irtysh, which are mixed with loam, lie mostly in layers and seem to have been carried there by the deluge. One layer, near eight fathoms, or more, above the highest water-mark,

mark, is mixed with the tellinæ I have mentioned. Most of them are calcined, but have preserved something of their outward, horn-like, upper-skin. These very layers, in which the muscles are dispersed, contain all sorts of bones, some of elephants and some of other animals, nay, even the bones of fish-heads; of course, they must have been brought hither by some vast inundation; or it is a proof that the sea, formerly, stretched itself entirely over these plains. It is not the river, that causes here such great sinkings or excavations of the ground, as we meet with, but strong, subterranean springs, that gush forth in inconceivable streams, from underneath the high, sandy layers, and from a grey clay, that does not lie much higher than the level of the water. These streams are of a brackish taste, and it leads me to think they must proceed from the great lake I have mentioned. Indeed it is very dangerous to travel over many spots of the low-shore, as one often sinks suddenly into a bottomless swamp.

Between thirty and forty miles from the Irtysh, are three large salt-lakes, where the purest and finest common salt lies at the bottom of the whole lakes, a foot in thickness; but, in less quantity near the shore. The largest of these lakes, is about two miles long and about 450 fathoms over; in serene weather, the water has a blood-red appearance, though it is perfectly transparent. A guard of Tartarian Cossacks is placed here, to prevent the salt being taken away to the injury

jury of the revenue, and have habitations adjoining them. Here I met with, in the wet low-lands, a weed called the *Acorus*, which is dug up by travellers, in order to preserve furs from the moth, and which they assured me was very efficacious.

Travelling on by the Irtisch, I met with more elephant-bones and a shoulder-bone, which seemed to belong to a buffalo; also, some large, animal skulls, of which there is now no animal so large in all Asia. I passed over a step, where a number of horses lay about dead, which died of the air-plague. They lay in such numbers as to resemble a field of battle.

In the fort Korjakofskoi, which is one of the most populous on the Irtisch and the best built, commanded by a Lieutenant-Colonel, are two salt-magazines, belonging to the crown, and always containing a provision of some hundred thousands puds of salt, for a supply in case of want. These stores lay in large heaps, covered with mats, ready for transportation, in barges to the Irtisch, which lies at the distance of about sixteen miles. Each barge will carry from 17 to 18,000 puds, and down the Irtisch it is conveyed to the Imperial salt-office, not far from Tobolskaja.

If it was not for several plants that grow on these sandy steps, such as the *Axyris ceratoides*, the Siberian centaury and the wonderful wild liquorice, (*Astragalus*)

the sand would not be sufficiently solid to pass over: but this astragalus grows between the sand-hills, creeping with numberless thin, divided twigs, through the sand, gathering itself round it and thus forming hillocks, from four to six feet in diameter; the small, grey leaves of this plant covering the sand entirely. The bloom scarce rises above the ground, but it is directly covered with sand and the little cods, that hold the seed, ripen under the sand. I believe this fine plant, hitherto unknown to botanists, is very useful in rendering the quicksands firm. And here we saw, first, that fine and new species of mice, (*Mus arenarius*). The cods of the wild liquorice is their natural food.

In some spots of these sandy deserts, I saw such crowds of grasshoppers as covered the earth quite black, in tracts from fifty to sixty fathoms. These were un-winged, but I could see by crowds that were winged and whose wings were of a pale-red, that they were the *Gryllus Italicus* of Linnæus. This insect was here in such vast abundance upon whole tracts of dry and sandy hills, as to have devoured every green plant and herb, except the sandwort, the sharp pasque-flower, (*Pulsatilla*), and old wormwood-stalks: they had even eat the milk-thistle.

I could not but take notice, (and I mention it on account of it's rareness), of a large wolf advancing
near

near the road and starting before us a breeding duck; this animal looked at us a little while, with a great deal of phlegm, without being in the least dismayed at our noise; after this, went slowly on behind us, and crossed the road with equal coolness. The conduct of such an animal, so shy in the sight of men in summer, is remarkable.

Wherever we passed, during the hot days of June, we were dinged with the noise of little crickets, and I could not help thinking with enthusiasm of the Poet's description.

Strident arbusta Cicadis.

“ The shady groves with crickets chirp. ”

The 15th of June was sultry, almost to suffocation; yet *De L'Isle's* thermometer, in the shade, pointed at 104 deg. But we rode along some very dry and stony mountains, that reflected the rays of the sun and added to the natural heat. Nothing green could be seen but bushes of wild roses, the thrift, (*Spirea*), and the scarlet *Convolvulus frutescens*. The mountains consist, here, of a solid chalk-stone, which is broken and burnt on the spot, by transported miscreants. Here, also are 100 Cossacks employed in felling wood, which number is changed every three years. Among these, a Tartarian Orpheus, who played us a tune on a Kirguisian

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gusian fiddle, but not with sufficient charms to move the stones. This instrument is a monochord of two unequal strains, in form of a lute, the belly of which is narrow from below and but half covered with a sounding bottom. The strings are horse-hair and it is played with a horse-hair bow, and, when sounded, resembles the singing of swans; indeed the instrument bears much the similitude of a swan.

On the 21st, I was at the fort Semipalatnaja, where Dr. *Gmelin* has described as situated some ruins of ancient buildings. Some of these I saw, but one or two which he describes, I could not meet with, or they must have been obliterated since he was there. I stopped here in order to make an excursion and take a view of them. About seven miles from this place, we drew near the Irtysh, and about a mile further, we saw these ruins on a high border, which consists of slate-rocks, and on which is a picket-guard. Here are the remains of three buildings, the structure of which is mean and appears to be Bucharian, and the buildings are disposed without any order. The first is a wretched, quadrangular hut, 260 fathoms distant from the others, without windows, built with unburnt bricks, nineteen feet square, with a very low and narrow gate on the western side, towards the river, and three air-holes on the southern side. The roof is planks, overspread with loam, and broke in. Of the other two, the walls only are standing, part of which is built of those thin slates of which

which the mountain consists, fitted together as well as possible, and cemented with loam instead of mortar.

Seven miles from the guard-station, on the Irtysh, is the bartering market, where trade is carried on between the Asiatic merchants and the Kirguese. This place consists of a certain number of little, wooden houses, or booths, divided into several streets, and encompassed with a ditch and chevaux-de-frize, and are inhabited, or destined for store-houses, by native Russian or Tartarian merchants, or such Bucharians as arrive with caravans. Over the Irtysh is a ferry, and on the opposite shore are some huts, erected purposely for Kirguisian commerce. Most of the Bucharians come from Taschkent, in Little Bucharia; and there were, when I was there, some caravans with ordinary cotton goods. This people is more obstinate and uncivilized than those from Great Bucharia. The bartering trade carried on with the Kirguese, is most advantageous to the inland merchants, because these Kirguese, being of the middle horde and living on the Irtysh, are very simple and take trifles, at a high rate, for their cattle; so that the merchants, notwithstanding their long journey to this place, get a great deal by what they purchase. The Kirguisian sheep are here of two kinds, a large species and a smaller one, like those of the Kalmucks. Horses are sold here from four to fifteen and twenty rubles each, horned cattle, from two to four rubles each, and sheep, from thirty to seventy copecs a-piece.

On the 22d I set out, in the afternoon, and our horses were so bad, that they could scarce draw our waggons over the sand-hills. It was night when we passed the last, at seven miles from the fort. Two of the waggons were obliged to stop at the first sand-hill, the horses being knocked up, whilst I took up my lodging in the woods, and was unable to proceed any further till noon, the next day. The rest of the road to Osernoi Staniz, where I was going, is tolerably level, and we met with nothing worth notice in our way but a tumulus, on which stood a stone with the principal features of a man's face carved on it. It was thirteen inches broad, fifteen long and four and a half thick.

The many changes of heat and cold which I subjected myself to, when I left my waggons in order to search for plants, and the daily cold and stormy showers to which I was exposed, brought on a dysentery and made me so weak, that I could get scarce up and down from the waggon; but, as I determined to rest myself at Krasnojarskaja, I made the best of my way there, and with as much expedition as my painful situation would admit. It was at the distance of twenty-seven miles, and I got there on the 30th of June. In my road, I passed an enormous tumulus, raised on the highest spot of the whole district, and was told, it had once been opened by a body of 150 peasants, and these diggers of hidden treasures, found in it no less than
forty-six

forty-six pounds of gold, which they shared among them.

The gold found in these graves, the many mines that have been here opened, and the scattered tumuli representing the beds of rest of the ancient Teutonic heroes, with the fashion of their tools, arms and furniture found within, puts it beyond a doubt, that the metallic mountains of the Irtysh and Jenisei were formerly worked by one and the same nation.

Krasnojarskaja was a bad place and a very unfit abode for me, in my disorder, to halt at, as the water was unwholesome and the refracted heat of the adjacent mountains injurious, but I could get no further, and was confined to my bed for three weeks. However, that I might lose no time, I sent Mr. *Sokolof* off, in company with my draftsman, on the 6th of July, in order to describe the districts on both sides of the Irtysh, with orders to meet me on the serpent-mountain, where I hoped to be able to wait for him.

Krasnojarskaja is a new-erected village, like many others, that have been built since the year 1764, and colonized partly with Polish emigrants of Russian extraction and of the old Greek religion, partly with peasants from the innermost parts of Russia, or such who, for little misdeamefnors, have been here exiled; partly, also, with voluntary colonists, from the more

populous parts of Siberia. This village has been erected but three years and has, at present, only twenty houses; most of the inhabitants are exiles, to whom the Empress has been pleased to restore their liberty, and enable them, once more, to enjoy the sweets of domestic life, by peopling this desert part of the world. The clemency and philanthropy of the Mother of this country, has extended so far as to supply these wretches, like other colonists, for the first three years, with money and provision, monthly; and such wise proceedings will, doubtless, render these districts, in time, as populous as other parts of Siberia. Indeed, most of these new villages are so happily situated for agriculture, that the inhabitants cannot but be prosperous. The only complaint of this and other villages, situated on the Uba, is the unwholesomeness of its water, which is apt to cause fevers, especially to strangers, and, as the country folks, here, imprudently nurse such fevers by astringents, it brings on lameness and other nervous effects. And yet the people seem rather disposed to use this water, than search for good wells. My whole retinue suffered by drinking it. Every man, except one, was afflicted with a fever so irregular, that no remedies could cure it. After we left the place, the disorder lurked about them for three weeks.

July, 17, 1771. We left Krasnojarskaja on the 17th, travelled up the Uba and visited the lead-mines, in which is found copper and a small quantity
of

of silver, and, on the 27th, Mr. *Sokolof* joined us. He had travelled down the Uba, and brought me an account of a great curiosity, in the district of Ustkamenogorskaja, to be seen, in the remains of a fortified, Kalmuck Pagoda, which goes by the name of *Ablaikit*.

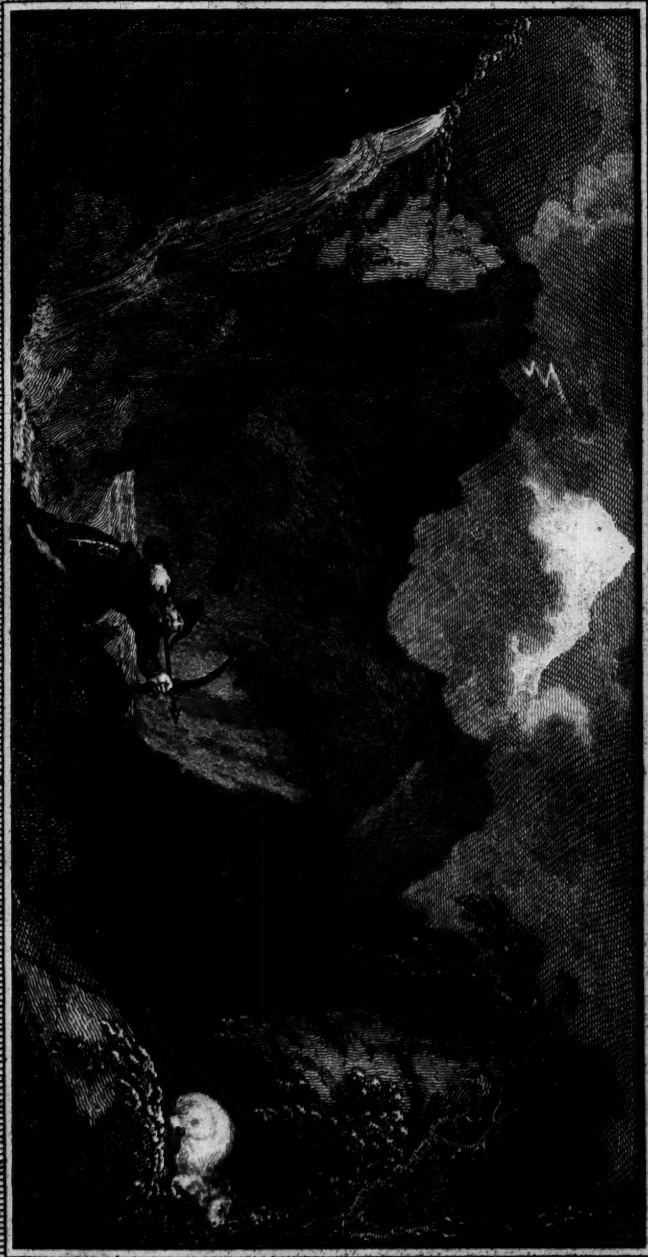
The Pagoda *Ablaikit*, lies out from the frontiers of the Russian empire, on the left side of the Irtysch, in a desert formerly inhabited by the Dsungorian Kalmucks, but now by the middle horde of the Kirguese. The history of it's building, by *Ablai*, a Prince of the Kalmucks, and it's destruction may be seen in a remarkable treatise, written by counsellor *Muller*, and published among the works of the Imperial Academy of Sciences, at Petersburg, and, also, in the tour of Mr. *Gmelin*. It is in ruins, but the ruins shew, that all the magnificence of an uncivilized, Asiatic people is capable of, has been lavished upon it.

After having taken Mr. *Sokolof's* baggage into my waggons, we set off; on the 27th of July for the Serpent-Mountain. We crossed the river Alei, and came into a deep valley, encompassed on all sides with steep and rocky mountains, a vale delightfully cool and refreshing, in arid, sultry weather, enamelled with flowers and frequented by all sorts of wild fowl; which renders it, throughout the year, an agreeable place to the neighbouring people, must furnish their tables with the

most delicate productions. and afford them comforts which even a prince might envy.

The mountains here are covered with birch and poplars, wild roses and raspberry-bushes, a fruit the bears are very fond of, and will very often take them from women and children, who go out to gather them, without doing them any harm; neither will they, in summer, attack any man, unless much provoked. From the heights of Ossinowa Gora, we had an awful sight of the steep and rocky, towering cliffs of the adjacent mountain, called, in Russ, *Bjelki*, whose top was covered with snow, and which may be seen at seventy-five miles distance. This mountain is called the Snow-Mountain, is much torn, and it's ascent so steep, as to have one precipice, or rock-wall, 150 fathoms in perpendicular height, each fathom seven feet English, down which tumbles the river Tigerak, with a tremendous roar. This river is, here, fifteen fathoms wide, and prodigiously rapid. Before we reach this precipice, which is accessible only in two places, we descry, at a distance, another enormous mountain, whose conical summit rises in a stupendous, rocky pyramid, far above the clouds. These mountains and their gigantic brethren, appeared now more dreadful, as many gloomy thunder-clouds gathered round their tops and brought on continual rain, till the 2d of Aug. when the sky cleared up. (See the plate.)

THE SNOW MOUNTAIN & STONE LANCE



James D. Smith

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As we rode from the mountain Ossinowa Gora to the next post, the open valleys, on our left, exhibited a delightful and unexpected change in the vegetable kingdom. We had not seen a remarkable plant for some time, and all the grass had lost it's verdure; but here, the mountains and vallies were covered with a vernal green, like spring, and numberless plants were in bloom. The most remarkable were the fellwort, (*Gentiana verna*), the catmint, (*Nepeta multifida*), the dragon's head, (*Dracocephalum peregrinum*), the bitter vetch, (*Orobus latbyroides*), the French honeysuckle, (*Hedysarum Alpinum*), the liquorice, (*Astragalus Syriacus*), the John's-wort, (*Hypericum Ascyron*), the rhubarb, (*Rheum undulatum*), which often grows out from the bare clefts of the rock; the milkwort, (*Polygala Sybirica*), and the cinquefoil, (*Potentilla fruticosa*), which grew like bushes, with high rods, and decorated the vallies every where: also many species of *Abrotonum*, several sorts of wild leeks and a small species of swordgrass, which *Linnaeus* has taken no notice of; it is a common plant and has very few flowers. Among other plants in this district, an elegant one and hitherto unknown to botanists, is the *Spiraea*, with thick rods, which the Cossack hunters make use of as ram-rods to their fire-locks.

This district was, in every respect, so very remarkable, that I wished to have been here a month sooner, to have climbed up the mountains myself, which my
illness

illness had now rendered me too infirm to do; indeed, I was so weak as not to be able to walk half a mile. I dispatched, therefore, Mr. *Sokolof*, with a huntsman and an escort of Cossacks, to the high mountains, and visited the lower ones and their caverns myself, in which I found a number of stone-swallow's-nests, (*Hirundo alpestris*), the pellitory (*Parietaria*), and little, stinking figwort (*Scrophularia*), with white blossoms, growing upon the stones. In one cavern, whose entrance was twenty-six feet broad and sixteen feet high, somewhat wider in it's continuation, and running 160 feet right into the mountain, I found many human bones and some few, little trifles carved in wood, perhaps some superstitious ornaments of the Kalmucks. Here I met with three Kalmuck skulls, and I will declare them to be Kalmuck, as from the flatness of the skull they are distinguishable from those of any other men. These bodies were, perhaps, here placed by a peculiar order of the priests, or some Kalmucks might have been killed, in this cavern, by accident. On the rock, without, grew plentifully the saxifrage, (*Saxifraga crassifolia*), vulgarly called, there, the Mongolian tea; for, as the trade with China was, for some time, interrupted, and the tea, that was imported at Petersburg and Archangel, too dear, in these remote districts; this plant was introduced by the name of Tschagirian tea, and the people learned, from the Mongols and Siberian Tartars, to boil it like common tea. It's leaves do not fade and die in one year, but
become

become only dry and brown, afterwards blackish, and it is four years before they drop off entirely. It gives the water a red tea-colour, with a taste like that of bad bohea, which, if the plant is not too much boiled, is tolerable; but not so good, that any one would take it in preference to other tea. The fresh leaves, like the roots of this plant, are uncommonly bitter and styptic, of course, are not fit to be taken. It is, however, worth trial, whether this plant, which I found antiseptic in the highest degree, is not a good remedy in fevers. I am confident it possesses some medicinal virtue. It is found here, on the north side of all rocky mountains, in vast quantities.

On the 1st of August, Mr. *Sokolof* returned from his troublesome tour, his companion, not knowing his way. They climbed up a mountain covered with larches, firs and pines, and so much bewildered with bushes, that their cloaths were torn to rags. The most curious thing he brought me, was a species of stone-hare, (*Lepus Alpinus*), which lives about the rocky brooks of the high mountains, and is common in all the eastern mountains of Siberia. They are not much larger than a guinea-pig, weigh about fifteen ounces, are of a yellowish colour, have large, round ears and, instead of a tail, a little lump of fat. (See the plate and the description, at the end of this volume). They inhabit the clefts of rocks; if the weather be foggy, will set the whole day in the open air, but, towards night,

night, retire on the outside of those cliffs that project from the grafs, and whistle. They will then suffer a person to approach them very near, but, if shot at, will throw themselves into their clefts, yet appear again, soon after. A wonderful quality of this animal, is their mowing the grafs, after the month of July, with their teeth, and carrying it, as a winter-provision of hay, in heaps, into their clefts, so that one may discover the dwellings of these animals by the heaps of grafs on the rocks. This animal reminds me to observe, that though they abound in the wild frontier-mountains, they are almost lost within the frontiers, as the country, there, is more populous. For this reason, sportsmen, in the favourable season for catching them, go, with the leave of the commanding officers, without the frontiers, into desert and woody districts, where they find them in plenty. They catch here, also, a number of sables, whose skins are short-haired, but very fine and black; and, also, a great quantity of martens, which, further northward in Siberia, are not to be met with, and are very rare in the upper district of the river Jenisei. Another species of little, forest-animal, whose reddish fur is but of little value and costs, here, four or five copecs each, is what they call *Kulonki*, a species of weasel not yet described, which is very abundant about the Jenisei and no where else to be seen, but in the woody districts of Siberia. It's name is of Tartarian origin, and implies a glutton, it having been observed that this animal, if caught in a snare or trap

trap withot her animals, and not soon taken out, will devour all that is with it. It steals, like the pole-cat, into villages and robs the peasants of meat, butter and other provisions. The Cossacks quartered here on the lines, catch stags, elks and bears, in covered pits; they also kill them with fire-arms. They fix the gun upon a fork, cock it, and to the trigger fasten a string, which is turned round a peg in the ground behind it, and put across the spot where the animal must pass; which if it does, it touches the string, discharges the piece and shoots itself. There are, also, wild boars in the miry districts of the high mountains; and abundance of good foxes, lynxes, and squirrels, and along the mountain-waters, otters, and beavers. The stone-rams (*musimon*) dwell only on the highest and most inaccessible rocks, never feeding in inhabited places. The chamois seems to be wanting here; but probably a few may be found on the mountains, as I received a horn of one from the Jenesei: and on the copper pieces dug out of the tumuli, the figure of the chamois is very common.

It occasionally happens, that for some bad trick, and through a love of independence, miners will run from the mines, and dwell a long time in the woody mountains, thriving and growing rich by hunting. Such runaways have been discovered, who have built huts in the wildest places, without the frontiers. In search of such colonists, detachments of troops are occasionally sent

sent far into the mountains, where they have found hermits, who, from fantastic zeal, have left their villages, and settled in these inaccessible parts.

It is plainly visible that, on chalk mountains, all wild plants become much finer, and more perfect; which may be attributed to the nature of this species of rocks, which strongly attracts the moisture of the air, clouds and fogs, and absorbs that attracted moistness so, as not to let the plants have too much wet.

In this district I passed an old deserted copper-mine, in which silver was found, that had been worked by *Dimidoff*; and a manufactory adjoining it, the dwellings of which were now only inhabited by husbandmen. In my road on, about 54 miles before we reached the serpent-mountain, the banks of the river Alei are covered with wood, in which there are a great many white poplars; and in the banks of the brook Berefska, which falls into the Alei, and which consist of a kind of loam, and, underneath, layers of sand, we found enormous teeth of elephants, and some remains of smaller animals. Some peasants that rowed down this brook a fishing, first discovered this curiosity; seeing a large tooth of an elephant projecting from the sandy banks, they drew it out. I have seen a grinder found here, which seems like the tooth of some large buffalo; but I cannot give it, by my remembrance,

membrane, to any known animal, if it be not that of the rhinoceros.

Serpent-mountain. We reached the serpent-mountain on the 11th of August. It is so called from the innumerable serpents that were every where crawling about it, till it was covered with mines. I was shewed some sharp, outstanding angles of rocks, in which I saw smooth excavations, as if polished, which are said to have been made by these serpents, who have now taken possession of a neighbouring mountain. This mountain, by name Smejefskaja Gora, deserves justly to be called the crown of all Siberian mines; and if it was to be searched into with proper care and exactness, would take up more time than a traveller would be able to bestow upon it. I shall, however, mention circumstantially all the accounts and information I could gather respecting it, and for which I am indebted to its director, Mr. *Leube*.

Before the year 1732, it was known that this mountain was metallic; for its old trying pits had been discovered before that time. In 1745, Brigadier *Beier* ordered regular works to be undertaken. Its distance from the Irtysh is 71 miles; and from the Oby, which flows east and north from it, 107 miles. It is encompassed all round with steep and torn mountains, which form part of the Altai, and between which the brook Korbolicha flows into the Alei: part of these torn
moun-

mountains consists of chalk and slate, and contains some good ores; yet far inferior in extent and richness to those of the serpent-mountain.

The serpent-mountain is divided from all adjacent ones, by a valley which draws towards the Korbolicha, and rises to the perpendicular height of 30 fathoms. The whole mountain may be considered as a great stock covered with slates, which consist of rich gold, silver, copper, lead, zinc, arsenic, and sulphur ores. This stock has two divisions, entirely separated without by a depression, or dale, running from north to south, and within the mountain, by slate-rocks. The level part of this stock consists of chert, which, with irregular sinuses and shelves, runs northward into the depth; but the hanging part of the mountain is a heavy and compact spar, over which the slate-mountain joins. About the chert, the ores stick in stocks, nests and branches, so that it is commonly encompassed with a matrix of a richer, and often, nobler alloy than the ores themselves, and a great deal of massive metals. The chert in which the ores lie, is, in substance, mostly like a solid fire-stone; its color, exposed to the air, is yellowish; further inwards, light grey, or bluish. In the neighbourhood of the ores, it is more like metal in large pieces, or nests, and impregnated with a silvery black, or enriched with massive gold, or silver plates. This quartz, chert, or hornstein, is therefore

therefore a principal part of the works, and contains a good deal of arsenic.

The spar-part is very compact and solid, of a grey or white color, and uncommonly heavy; great part of it is converted into metal, and mixed with several ores. The slate which lies on the spar is commonly, at the day, vari-coloured and soft; but in the depth, solid, thoroughly grey, or blackish. It often contains marcasites, and pebbles of a very aquatic nature; and care is to be taken not to advance very far into it. To this care they owe the depth of the mine, and its being worked with only a few hand-engines.

Betwixt the chertz and the spar, in the upper divisions, lay some rich yellow ochre, to the depth of 10 fathoms, and in the lower, 38 fathoms in length, 10 in breadth, and 11 in depth; between which, and the chertz, lay some white argil, to the thickness of an ell. In general, the ores from the day to the depth of 20 or 30 fathoms, were the richest, and most ennobled with massive metals; but at a greater depth, the ores were poorer, and less ripe, and very seldom any traces of massive silver to be met with.

There are many shafts dug in this mine, that have been found very rich with silver; but the hornstein, or chertz, dug here, is immensely rich, containing beautiful ores in nests and bunches, which are of consider-

able alloy. In the year 1754, they made a great adit, which was completed in 1758, and runs to a depth of 32 fathoms, 585 fathoms long, having five air-holes at a proper distance, and opens with its mouth near the brook in the valley. By means of this adit, which intersects the whole structure of the mine, all the numerous works above it, from which the water was drawn in an expensive manner with hand-engines, are now not only freed from water, and fresh water procured in the whole mine, but also the internal quality of the serpent-mountain is still more known, and a road made to the deepest works. This adit, or road, has gone through 315 fathoms of clay, through 150 fathoms, further on, of reddish slate, then 83 fathoms through chert, 70 fathoms through spar and pebble-ore, five fathoms of empty spar, and lastly through 22 fathoms of a grey and black slate; in the whole, 645 fathoms, or 1505 yards.

The works are here carried on with that regularity, skill and order, as may serve as an example to all other mines. The deepest part of the works cannot be continued in any other manner, than by blowing up the ores with gunpowder; and they use here annually from 5 to 600 puds of powder for the purpose; each pud, 36 pounds English.

The ores hitherto dug in these important works, contain an almost incredible variety of species. The
metals

metals and ores dug throughout the mine, to this time, are as follow.

Massive gold, which lies mostly in the upper part of the mountain, from the surface to a depth of 10 fathoms, where the ores are the richest. Its color is high and pure, and it is found in a matrix of chert, brown ochre, and lazuli; more below, it is very pale, and impregnated with silver; so that often one and the same bunch has three, or more sorts of color. It is found in irregular grains, and pieces of different, yet small, size: sometimes it is impregnated with particles of arsenic. In many silver-ores, it is so tenderly sprinkled in, that it can hardly be discerned with a magnifying-glass; yet if it be true that no gold is found changed into ore, it must be scattered massively in all ores of this mine. Most of the massive gold is found here visibly in the chert, and the fine sand-rock; also in brown ochre, and rich lazuli: bunches of both the latter have been found underneath the day ores, quite covered with veins of massive gold. Massive gold is also here found in veins, and pebble-ores.

Massive silver, which has commonly some gold in it, is found in pieces and threads of different sizes, in kidney and clefts. It commonly occurs in chert, spar, different species of spar-ores, pebble, and silvery copper-ores; also, in loam and argyl. The richest chert-ores, contain a great deal of massive silver; and plates of

the same have also been found, in the upper works, upon loam and verdigrease. The hair-silver never occurs in very large threads. There are also black chertz-kidneys, with massive, silver plates in them.

Massive copper, is in metallic and small pieces of irregular figure, only in the upper part of the mountain. In some places it lies in white and green loams; in others, in green, silver, and coppery spar-ores, and carries with it a degree of silver. It is also dug in tender plates, upon spar-ores, nestwise.

Other ores, dug in this mine, as pebble, arsenic, lead, &c. all contain a degree of silver, and some have gold. In an assay made of 5490 puds of dug ore, there was found 55 puds of black copper, six puds, nine pounds, and better, of silver, and upwards of three pounds of gold. Some produce one pound of silver in 30 pounds of ore; some more, some less. In the lead-ore a number of beautiful, coloured crystals are found.

As a curiosity of the serpent-mountain, it deserves to be mentioned, that a piece of a grinder of an elephant, also a piece of fungites, were found in one of the shafts, which plainly prove its origin from the sea. I saw them both; and I doubt not but other such remains might be found, if properly looked after.

The

The tracts of the ancient workmen, noticed in these mines, are too remarkable not to be mentioned. The upper and lower division of the ores of this mountain were not known to these ancient miners. They made deep, trying pits into the soft and rich ochre-ores and clays, situated near the surface, and made shafts upon them to the depth of five fathoms, and more; but to penetrate into the solid ores, they had neither means, nor tools. Many of their tools have been found in the modern works; several were cast in copper, which leads me to think, that iron was unknown to them; and indeed the copper knives, daggers and arrows, found in the ancient tombs, in the step of the Irtsch, is an incontestable proof of it. A few years since, they found a half metallized skeleton of an ancient miner, who was probably squeezed to death by the falling in of a shaft; about him was a leather bag of the most precious ochre. Between the mouth of one of the shafts, and the stamping mills, that formerly stood on the adjoining brook, they found, at the distance of more than 100 fathoms, one of their washing-places, which still contained so much gold, as to make it requisite to pass the rubbish through the modern lavatories, in order not to lose such a treasure.

But notwithstanding this, we can form a conjecture who the ancient nation, so skilled in mineralogy, may have been. The Russians, in Siberia, call them

Tschudaki, which implies, an old nation. They cannot have been Tartars, or Mongols, because these nations have been acquainted, time out of mind, with the melting of iron, and yet are unacquainted with the melting of copper, or other precious metals; nay even of digging them. Probably this nation might have been driven from their ancient abodes, which they occupied along the Siberian mountains; or may have been destroyed by the wandering Mongols, and Tartars. This is probable, from the fine and delightful mountains about the Jenisei, and from the many magnificent tumuli, in which gold and other valuable things have been discovered. All the tools found about the Jenisei, shew also more art and splendor, than those on the Irtysh, which are clumsy and heavy. But no where do we meet with traces of stone-buildings, or other habitations, which might be attributed to that people, who were probably Nomades, and whose way of life gave the best opportunity of discovering ores. What then was that nation, so skilled in mineralogy? Were they the Parthians, lost in history, or were they the Germans? Their descendants, perhaps, may think the supposition too romantic,

In the old mine-works of the nation I have been speaking of, some timber has been found, three or four fathoms deep in the ores, quite metallized, and converted into copper, with silver alloy; and some that contained little plates, and threads of massive copper
and

and gold. This serpent-mountain, of all the discovered mines, has, for the last 26 years, produced the most important treasures; and the imperial silver-manufactories on the Ob have been chiefly supported by it. As Mr. *Gmelin* has observed, it is the first of all Siberian mines, where the ores, to a prodigious depth, have kept constant. To give the reader a proper idea of the great production of this mine, I shall briefly tell him, that from the year 1749 to 1762, they sent annually from two to four hundred; and since 1763, from 5 to 600, nay, even 800 puds of gold and silver, each pud 36 pounds: and in all, since the beginning of the silver-works, above 10,000 puds of raw silver; which was converted into 318 puds of gold, and above 9000 puds of refined silver. The transport of the ores to the manufactories, is done by voluntary waggons, or peasants, working to pay their poll-tax. The carriage from the serpent-mountain to the manufactories, is from five copecs to seven, per pud, according to the distance and badness of the roads.

On the top of this mountain is a fortress, to guard it, in form of a polygon, which encompasses the upper works, and extends itself mostly over the south and east sides of it; so that the great works, with some adjacent store-houses, forges, and other watering-places, lie without the fortress, on the western side. The fortress has two stone-bastions, on the top of the

mountain, besides an earth-wall ; with two bastions in the northern angles, and half a bastion in the southern. The principal buildings are, the house of the commanding-officer ; that of the chief director ; the comptoir, where a great train of artillery is kept ; the new laboratory of assays, which contains a curious and beautiful collection of ores ; a school-house, and an hospital. Besides these, there are store-houses, magazines, and five dwelling-houses for the officers, several private houses, and stables. The foundation of a beautiful, stone-built church, upon a modern plan, is laid ; but till the building is completed, they make use of a timber one. The Smei forms a canal within the walls of the fortress ; its water fills the ditches, and the fortress itself, and the suburbs, have several wells of fine, wholesome water. The suburbs lie on the north and east sides of the fortress, quite down to the valley, and towards the adjacent heights, and are laid out in regular sheets, one of which is three quarters of a mile long. The number of houses amounted to 400 ; and the place is encreasing daily.

The direction of the whole mine, is under the celebrated Colonel *Leube*, who, before the year 1759, was the German preacher of this place. Under him is a captain-director of the works, a master of assays, several other officers, and clerks. The miners are, in number, 887 ; and above 300 more, employed in the lavatories. Several hundred peasants are constantly

stantly felling timber; and the garrison consists of 100 men, commanded by a captain.

As the spar, chertz, loam and other rubbish dug out with the ore, are of a metallic nature, but not of sufficient value to pay the expence of transporting and melting; there is established in the neighbourhood, five stamping-mills and five lavatories, for grinding and washing such ores of small alloy; and every thing is so contrived that the works are not suspended even in winter. To prevent the canals, that work the mills, from freezing, they are covered with sprays and hay, and the lavatories are heated by ovens.

The lavatories or washing-houses, produce annually a considerable quantity of gold-dust, and, sometimes, they find, in the rubbish, small pieces of solid silver. Since 1760, they have produced 160 puds and six pounds of gold-dust, which is sent to the Imperial Treasury of Mines, at Catherineburg, and since the new stamping-mill has been erected, it has produced, in one year, above thirty-seven puds extra.

Before I quit this mountain, I will mention two remarkable occurrences—The one is, that, in the course of this year, several shocks of an earth-quake were here felt; and, the other, that inoculation for the small-pox introduced in children and adults, was so successfully performed here by a Russian surgeon, in 1769, whose

whose name is *Timofei Andréjef*, that out of 469 persons not a single one died. The greatest number was inoculated on the mountain itself, and the rest in the neighbouring villages. So happy an experiment in Siberia, surely deserves a reward !

I am indebted to Mr. *Leube* for the observations on the earthquake, felt here on the 18th of February of the present year 1771. The motion was like a fluctuation of the earth, and passed from North to South. On the 17th of February, the night before the earthquake, the quicksilver of the barometer fell half an inch; during the whole night, a violent south-wind blew, and at five in the morning fell some snow, to the depth of four inches, and continued on the 18th in the morning, during a great temperature of the air. Then the usual winter-weather continued to the 22d, the sky was cloudy and the south and north wind blew by turns; but on the 22d came such a lasting frost, that the mercury, in *de Lisle's* thermometer, stood between 182 deg. to 196 deg. till the 3d of March. The shocks shook the works and workmen without doing any damage, and in the houses at the silver-manufactory, at Barnaul, at the distance of 170 miles, all the instruments and furniture were waved several times backwards and forwards.

On the 17th of August, I left the serpent-mountain, in my way to the silver-manufactory, at Barnaul, distant

tant 170 miles, and thence to Tomskoi, 378 miles further.

Travelling on, I passed some tumuli, on the 20th and 21st of August, consisting of a heap of stones covered with earth, in which were found shin-bones and back-bones of men of a gigantic size. I crossed the Alei, near the village Kaschina, about 70 miles from the serpent-mountain, which has a fine, stone-built church, a bailiff, and several villages dependent on it. I changed horses here and sent my waggons on, the straightest road, wandering myself through all the environs,

I reached Barnaulskoi on the 22d. one day after Professor *Falk*, who arrived so much indisposed as to take to his bed. Meaning to stop here but a few days, I was desirous of seeing the works as soon as possible, and Major-General *Thrmann*, commander-in-chief of the garrisons, quartered on the mountains, gave me every assistance in his power; I therefore sat up the whole night, writing and drawing what I have here communicated.

Rich and important as the serpent-mountain is in ores, is this place in it's works. Here the chief melting and refining of the gold and silver-ores, brought from that mountain, is performed. Here also are the head-quarters of the regiments and the chief mine-office

office of the whole district. Its first establishment was when *Dimidof* possessed all the mines of the Altai. The works were increased in 1763, and the two manufactories of Nowo-pawloffkoi and Sufunskoi were established in the same year. Barnaul, at first, had only six blasts and three refining hearths. The ores are conveyed on the rivers Alei and Tscharysch, to save the great expence of land-carriage.

The manufactory of Barnaulskoi, is built on a brook of the same name, near the mouth of the river Ob. The head of water, pent up for the mills, is 232 fathoms long and thirteen broad, and the reservoir has so much water as to supply the works throughout the year, without the least suspension. All the huts or covered places for materials, are situated according to the best order and disposition. They are built of wood, and encompassed with a wall. The principal street consists of a beautiful town-house, a mine-office, a school and the barracks. The places worked by water, are two smelting-houses, one with thirty blasts; a stamping-mill, a forging and refining hearth, a saw-mill, a corn-mill, a groat-mill, a polishing mill, and two other stamping mills. The other offices are, an assay-house, with six blasts, a 'compting-house, a small forge, a locksmith's work-shop, and a bellows-factory. A treasury is going to be built, and a place to keep the archives of the manufactory. Near the dwelling-houses for the workmen, are magazines for provisions, corn, hay, &c.

On

On the other side of the dam head, is a fine new-built mansion for the commander-in-chief; and close by, several, fine houses, belonging to the military officers. Here is also a court of sworn citizens, a market, an hospital, a stone-built, public apothecary's shop, a botanic garden, store-houses, powder and artillery magazines, and the caserns of the garrison. The number of other dwelling-houses amounts to 1000. The place has also two wooden churches; but they have begun a fine, stone-built church, on a magnificent plan, which will be one of the greatest ornaments of the country.

The supreme mine-office being here established, there is a council, held by authority of the Empress, which not only commands all the mines of Altai, and the silver-manufactories on the Ob, but all the officers and workmen, and above 40,000 peasants, from the districts of Tomskoi and Kufnezkaja, who are obliged to work here for their poll-tax. These peasants are very liberally paid; and as their homes are sometimes at a very considerable distance, they receive a competent allowance for coming and returning, all regulated by the wise administration of General *Nbrmann*. The hospital is established on very philanthropic principles; it has a chief surgeon, and six under surgeons: and, on account of the German works there carried on, they have a Protestant preacher. The garrison here quartered, as a guard to the place, consists of a company

pany of dragoons, and three companies of foot-soldiers, commanded by a major, who are paid, as if in camp. The number of masters, and workmen, amounts to 400; and their children are not only instructed in reading and writing, but in merchants-accompts and geometry.

They use here annually from 28 to 30,000 baskets of charcoal; and to make 80 of such baskets, it takes 20 cubic fathoms of wood; but the price of such a basket is not more than 25, or 26 copecs; about 13 pence English: and they sell, annually, from 13 to 15,000 puds of lead. In the last eight months, they had already past through 15 furnaces, for the melting of raw ores, 2,21,000 puds of ore.

Besides these works in Barnaul, there are others in the neighbourhood, close by; such as nine lime-kilns, a bell-foundery; a brick-kiln, 800 fathoms long; and also eight other kilns, joined together, in which they burn, with one fire, which does not last above three or four days, from 45 to 50,000 tiles; also, a glass-manufactory. At a little distance from Barnaul, is a country-house, belonging to the general, called Charlotte-dale, superbly furnished, with a park, and extensive gardens, in which are many beautiful cascades, fountains, and statues. Adjoining Barnaul, is a brew-house, belonging to the crown. The sale of strong beer is prohibited here, but on certain days of festivity;

vity; or the workmen would drink too freely, and neglect their duty. Notwithstanding the northern situation of this town, it enjoys a milder air, and warmer summers, than the more southern districts. A proof of which is, that all garden-stuff, except colliflowers, thrive here amazingly. The sandy and elevated district, and the shelter of a dry forest, contributes much towards it. The only defect in the situation is, that the water every where has a bitterish taste.

I left Barnaulskoi on the 26th of August, and directed my road to the silver-manufactory at Nowo-Pawloffki, where I arrived the next day; saw, as I passed, a lake, whose appearance, at a distance, was blood red; and met with, in the forest, a peculiar species of mice, (*Mus Barabensis*), various remarkable agarics, among which there was *Lycopendon stellatum*, and a particular species of *Hydnum*.

Nowo-Pawloffki is one of the manufactories lately established, as an auxiliary to Barnaul, and promises to be a populous place. It has a conveniency of water, and every work and mill proper for the business; to enumerate them would be needless. Nothing is here performed, but smelting of raw ores. In the structure of their furnaces, they keep off the vapours of arsenic, which would be hurtful to the workmen; but, from the roasting of ores in the fields, the air is so poisoned by the smoke, that a great number of chicken,
and

and other poultry, are killed by convulsive disorders.

On the 28th I set off for Tomskoi, and took Sunfuskoi in my way, which lies lower down the river Ob, at the distance of 54 miles, and where is a Siberian mint. The Ob is larger than the Irtisch, and equal to the Wolga, in its greatest breadth. The villages, and most of the towns, in these districts, are happily situated along the river, and enriched by agriculture, hunting and fishing; for they sell their corn at a good price, to the silver-works, and the fortresses, along the Irtisch. The soil here is uncommonly fertile, though the black earth is not above six or seven inches deep, yet there is beneath it a marly loam, that makes the corn thrive exceedingly. The peasants along the Ob, were, till late, very rich in cattle, especially in stout, laborious horses; but, within a few years back, the plague has raged among the horses, and large cattle, and they have sustained great losses. They have a custom here, to turn great troops, or herds of horses, loose into the forest, without any one to look after them. In the Barabynian step, situate between the Ob and the Irtisch, there are also wild horses, called *Ditschje*, which run in herds; and the stallions, that keep forward, looking out as spies to explore the enemy, are commonly shot. They are mostly of a brown, fallow, and dun colour. The peasants get also a great deal of money by catching squirrels, which
are

are very abundant in the woods of this district; they are large, handsome, and white, and their furs are purchased by the Chinese, at a price equal to ermine. The distance from the Ob to the Irtisch, is between 4 and 500 miles.

I reached Sufunskoi on the 29th of August. This manufactory was established in March 1764, for smelting raw ores; but, in 1767, they added to it a mint. It lies on the river Sufun; but they have erected a mill-dam, which is 110 fathoms long, and 12 broad. Here, with the copper of gold and silver alloy received from the silver-manufactories, they coin a money, current in Siberia; for, as in the beginning of the silver-works here they had collected above 30,000 puds of copper, wherein were about three puds and an half of silver, and about three puds of gold, which to separate would have cost more than it was worth; her Imperial Majesty issued an edict, in 1763, that, in future, all such silvery copper should be coined into a currency, with the Siberian arms on it, according to its intrinsic value, in the following pieces: *viz.* griws, or ten copec pieces; five ditto; two ditto, or groschewiki; copecs, half copecs or denuschki; and quarter-copecs, or poluschki: of which one part should serve to pay the Siberian regiments; and the rest the workmen, and other expences of the mines, and manufactories. The sum annually to be coined, was fixed at 250,000 rubles.

The court of the mint is encompassed with a high Ostrog*, and has but one entrance, which is guarded. Within it are, besides the pay-office, guard-room and coal-house, a forge, with a large hammer and two furnaces, where the great tools are forged; a smith's work-shop, where the stamps and punches are made; a smelting-house, with a lathe, worked by water, to turn cylinders, and the extensive building of the mint, consisting of several divisions. In the mint, are four divisions, one has three flatting hammers, with two glow furnaces, two of which beat the copper into plates. In the second, are three flatting machines, to give the plates their proper thickness. The third division contains eight machines to cut the plates into round pieces, and the fourth, six stamping machines: the whole worked by water.

The stamp of the coin is uniform, having, on one side, the Empress's name (E. II.) surrounded with laurels and palms, and, on the reverse, a crowned cartouch, borne by two fables, the supporters of the Siberian arms; and, in the field of the cartouch, is expressed the value of the coin and the year, with the words *Sibirskaja Moneta*, round it, in the characters of
that

* Ostrog, is a high wall, made with the bodies of trees, set upright, standing close together, used here, formerly, to fortify small places, but, at present, only about store-houses and prisons.

that country. In this mint was struck, in the years 1760 and 1767, 278,954 rubles; in 1768, 170,070; and, in 1770, 250,087 rubles, and some copecs: in all 899,913 rubles, each ruble 4s. 6d. English. Here are a fine church, several, good, public offices, and about 200 houses; some beautiful meadows; and the place is truly delightful.

Among all the Imperial manufactories, situated on the Ob, this is the richest in wood, and will never want any. Though a small part of the forest consists of poplars and birches, especially near the Ob, yet further on, are very fine timber-trees; and the forest extends to above 48 miles in length, and as many in breadth, without taking into the account other large forests lower down the Ob, which are well adapted for new manufactories.

I left Sufunskoi on the 30th of August, for Tomskoi. The country between the two places, is mostly covered with birch-wood, has a fine soil, but not the hundredth part so well inhabited as it deserves. The field-mice had done a great deal of harm to the present harvest, and were every where in scores to be seen. No species of field-mice was more common than the yellow one, with a black stripe down its back, and some small ones, quite yellow. Siberia produces two species of field-mice of its own, similar to the common, short-tailed ground-mouse; the one much larger;

with its ears quite concealed, and the other of a fox-colour.

Having got down from my waggon, on the 3d of September, to gather some feeds, and endeavouring to get up again, I fell, and dislocated my arm. It swelled so much, and gave me so much pain, that I could not raise it, and was obliged to wear it in a sling till winter.

When I reached the river Tom, which was on the 6th of September, I found, among the pebbles, some beautiful, cornelian stones; and, in Kaltai, a village 18 miles from Tomskoi, I was shewn, many very valuable ores, found in the same river. In this place, its neighbourhood, and in and about Tomskoi, are settled, from six to, 700 families of Mahomedan Tartars. They call themselves *Tschaty*; and are, in their dress and manners, as also in their religion, little different from those of Casan. Their women, contrary to the custom of other Tartars, wear, over their veil, or tatar, a calotte, which has no opening in the top of the head, but covers it intirely. Their girls wear the same, braiding their hair into three, or more tresses, and into 30 tresses on the day of their marriage. They are fond of being buried on the borders of some forest, or wood, and erect, over their graves, such durable sheds of timber, that a burial-place, at a distance, has the appearance of a village. In their houses,
espe-

especially in their summer rooms, they have chimnies, like the Baskirs. They are good husbandmen, and pay their poll, or head-tax, with great chearfulness. Instead of tea, they drink an infusion of the roots of the tormentil (*Tormentilla erecta*), which, when boiled, dyes the water reddish, gives it a very astringent taste, and is drank without milk. The chopped roots, or stalks of wild roses, used, instead of tea, by the Tartars of Casan, have a far sweeter taste. I saw, also, the following species of cinque-foil, used by the Siberian Tartars instead of tea: *Potentilla fruticosa*, known, in the remote parts of Siberia, by the name of *Kurilskoi Tschai*, and *Potentilla rupestris*, which they call *Polewoi*, or *meadow-tea*, boiling the whole plant, with the flower, as some do the sage (*Phlomis tuberosa*).

On the 8th we crossed the river Tom, in a ferry; and the banks striking my attention, I directed the watermen to row me to a particular spot, which I examined, and found the soil to consist of a blue, porytuous clay, uncommonly rich in vitriol. Some of the inhabitants of Tomskoi gather this vitriolic substance in dry weather, boil from it an impure, yellow vitriol, and sell it from 60 to 80 copecs a pud, instead of the genuine, Siberian stone-butter. Even their yellow clay is of a vitriolic nature; and in it is found kidneys of a slated stone-ochre, which burns red, and is used by cotton and callico-printers as a dye. In the same yellow-clay, lay layers, or nests of an impure, or bluish,

but some very fine, snow-white, porcelain earth, which the inhabitants fetch in quantities, to paint their ovens, rooms, &c. with, and in these banks I found, in some vitriolic slate-layers, notwithstanding their perpendicular folia and strata, impressions of little marine bodies.

Tomskoi lies on the right border of the river Tom, about 30 miles from its mouth, into the river Ob, on a very uneven soil, and spreads itself in length of the river, from south to north. In the centre of the town is a high hill, on which is a fortress, erected 130 years since, with four towers, two gates, and a bell-steeple. Within these is the wood-built cathedral, the town-house, the house of archives, and the treasury, built of stone; a store-house, where the furs, brought as tribute, are kept; a decayed guard-house, and an ale-house, where the Tartars, bringing their tribute, are regaled with beer. Here are also several private houses, the house of the waywods, and a public prison. In the north-east part of the town, is the church of the Resurrection of Christ; and, without the town, several salt-magazines. The most important part of the town lay beyond the mountain, along the Tom; but the greatest part thereof, with three churches, was unfortunately destroyed, last year, by fire. The inhabitants have been since compelled to erect their new buildings, agreeable to a certain plan, and uniformly corresponding with the whole; but, before the fire, the
houses

houses stood so irregular, that the windings of the streets resembled a labyrinth. The mud almost swallowed up the wheels of our waggons, for the streets will not be paved, till the new buildings are finished. In the burnt part of the town was the mart, wherein the goods and property of many a citizen were devoured by the flames. In the southern part of the lower town is a friary, and a nunnery, with their churches; and the same part of the town has a church, called the Annunciation, and another, dedicated to the Virgin-Mary. Here is also another town-house, a prison, a comptoir of the mine-office, and a custom-house, for the sale of brandies, brought here from the distilleries on the Tobol and Isset. The barges and vessels are moored below the town, on account of the shallows near it; and, without the town, the Koskolnicks, or Old-Faithful, of which there is a great number among the inhabitants, have their burial-places; and so have the Tartars.

Here resides the commander of the batallion in garrison; and to him the commanders of two other forts are subordinate. The court of waywodes is subordinate to that of Tobolskoi, and commands the most populous district of all Siberia, except that of Tobolskoi. The inhabitants of Tomskoi live mostly by trade. Here are no other manufactories, than such as dye Russian hides; and some few callico-printers. No where have I seen gluttony so prevalent, as in this

place ; which, added to other reigning evils, fornication, and its attendant, the venereal disease, must be a dreadful bar to population : especially, as for want of regular surgeons, the latter spreads itself excessively. Was it not for this, the place is happily situated for commerce, which is carried on here with all parts of Siberia, by the communication of two navigable rivers. Bread is cheap, meat not wanting ; and the Ob and Tom abound with fish, and supply other towns with it. It is only to be wished, that many sober and industrious families might truly enjoy these blessings !

Within these three years, the Chinese trade has been settled on a proper footing ; and the merchants have brought here, in the bales, a little, yellow house-moth (*Blatta Asiatica*), which has increased incredibly. In all the woods between the Ob and Tom, they have had an incredible number of squirrels. It has already been shewn, that they emigrate, in summer, from the south-east mountains, into the district of Tomskoi. Every ruined building of the town, and the towns of the fortress, were now infested with them ; and they were caught alive by boys, who sold them very cheap.

On the 11th of September, in the afternoon, I continued my journey, and travelled 18 miles in the evening. This country is pretty well colonized with Tartars, and troublesomely infested with black crows, which

which are so rapacious, that they will, in winter, attack a yard of poultry, in flocks of twenty at a time, and tear the fowls in pieces. I met here with a species of hedge-sparrow, or little nightingale, with a fine yellow breast, and a green tail (*Motacilla Cyanurus*); also, a wonderfully small species of shrew-mouse, that did not weigh, when full grown, more than half a dram. They are somewhat browner than the common shrew-mice, and have, in proportion to their body, a very thick, full, round tail. They are, therefore, quite different from the *Sorex minutus* of Linnæus, which is also a Siberian animal, and are the smallest of all quadrupeds ever recorded, in human knowledge. This little animal shall be fuller described hereafter. It is fond of the water, like the black water-shrew, and the common shrew-mouse; both of which are very common here.

The passage over the river Ki is by a ferry. The river is stony; and, among the pebbles, there are pieces of high-red, black, and also black and yellow spotted jasper. Colonizing this district, will make the farmers comfortable, and enable them to sell their corn at a good price; which, at present, they are often compelled, by indigence, to part with, for little, or nothing. They have not, lately, been able to get more than three or four copecs, or one penny English, for 36lb. weight; and here are public granaries, where, when bought at this price, it is stored up, near a navigable

gable river, to be conveyed to places where no corn is grown. At the time when the poll-tax is to be paid, a good horse may be bought for two or three rubles; because the indigent farmer can find no buyers. They have here a method of catching woodcocks, which frequent the birch-wood; simple, yet effectual. Laying a large plank across two branches of a birch-tree, they tie ears of corn at both ends, and at the distance of a few inches from each end, is fastened a circular springe, with a horse-hair snare, tied on the plank. The woodcocks sit on this plank, but cannot reach the ears of corn, unless they put their heads through the springe into the snare, and, if they try to come back, they draw the snare with them, and, attempting to fly, are entangled by the head. The peasants call this snare, *Nawori*.

I have already mentioned the Chinese moth (*Blatta Asiatica*), which the Tartars call *Tarakan*. Here, in Atschinokoe (about 230 miles from Tomskoi), where I was on the 19th of September, a village situated on the navigable river Tschulym, the peasants houses are so full of them, that, in the day-time, every dark corner, chink and closet, swarms; and, at night, they cover all the walls; nothing is free from these vermin, for they will enter the smallest clefts. No vessel, or box, be it ever so closely shut, can remain in these rooms, without being filled, the next morning, with thousands of big and little Tarakans. They even
thirst

thirst after human blood ; and, in one's sleep, all the uncovered parts of the body are bleeding with this insect : they will not touch any provisions, but bread, sugar, and meat. There is no eating or drinking, in these rooms, without having one insect dropping, after another, from the cieling, into the dishes, cups and plates. Various means have been tried to destroy them, without effect. Shutting up a room, and smoking it with brimstone, and offensive herbs, have been tried, but to no purpose. The only way to get rid of them, is to let the rooms freeze, in the beginning of winter, without fire. This will apparently destroy them ; but, by constant warmth, they will soon appear again ; and, in spring, every thing crawls with them, as before.

About 112 miles further on, where I was on the 24th of September, I met with some Christian Tartars, settled on the brook Sulgun, who, in summer-time, live in wretched jurts, or huts, formed with high birch-poles, set up in form of cones, flatted at top, and covered with strongly boiled, birch-bark, sewed together ; and, in winter time, in hovels, made with birch-poles, laid across each other, in form of a box. The fore-part of this box is left open, and represents a hall, or antichamber ; the other half is shut up by a partition, in which is a small door, and on the outside covered thickly with turf, to keep it warm. In the middle of this inner room, they make a Baskirian chimney, of
sprays

sprays and loam, with wooden air-pipes ; and, on the roof, is left a little, square hole, to let in the light, which they shut at night, and in very cold weather.

These Tartars have preserved most of their ancient ways of living and thinking ; for, independent of the crucifix, which they wear tied round their necks, and suspend also in their jurts, or tents ; they know but little of the Christian religion ; and as little of the Russian manners, except an imitation of the female dress, and some few necessary parts of agriculture. Their girls go about dressed in the Tartarian fashion ; and men wear furs and whiskers. They are, in general, poor, and have but little cattle ; owing, as is said, to the deep snows, which fall in winter, and will not allow the cattle to look out for food ; and to the great number of beasts of prey, in this district.

Mr. *Gmelin* gives us a further account of this people, whom he calls, the Tschoulym Tartars. He says, “ In
“ summer-time, the men are dressed like Russian peasants ; and, in winter, they wear long pelises, made
“ of deer-skins. The women wear trowsers, and boots,
“ made of the large skins of eel-powts. The other
“ parts of their dress are like those of the Russian
“ peasants, except that they border their garments with
“ fur,

“ fur. The girls plait their hair in tresses; and all
“ the female sex wear veils.

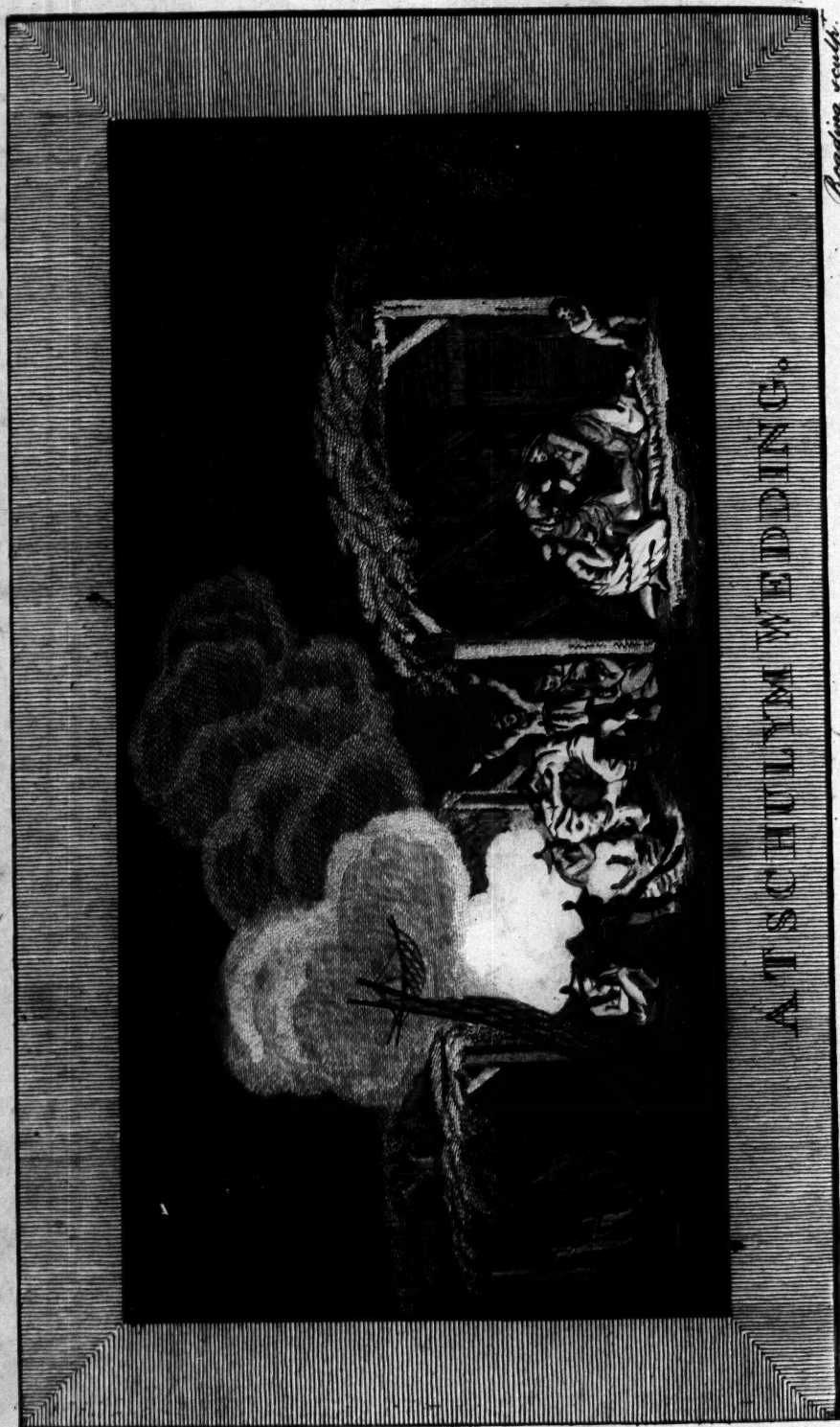
“ Their table is dirty, and badly accommodated. Fish
“ is their common food; bread is scarce with them;
“ as a substitute for which, they eat dried fish, reduced
“ to powder, which looks like a meal. Their greatest
“ delicacy, is parched grain, fresh stalks of bear's foot,
“ and the *Acanthus*, which they bruise all together,
“ and put under ground, till it is sour. In winter
“ they seldom eat any thing, but dried, or smoked
“ fish. The poor, who have neither milk nor flour,
“ live on various wild fruits and plants, which they
“ store up against winter; indeed most Tartars
“ do the same; such as the roots of piony, pimpernel,
“ (*Sanguisorba*), fumitory, (*Fumaria bulbosa*), a sort
“ of thistle, (*Carduus serratuloides*), and serpentaria,
“ (*Polygon bistorta*), a root they call *Mikir*, (*Polygon*
“ *viviparum*), the root of sagittary, (*Sagittaria sagit-*
“ *tifol.*), and the root of *Nymphaea*. The membrane
“ under the bark of the pine-tree they give to children,
“ as a sweetmeat; and they chew the root of *Calamus*
“ *acorus*, as the Indians do the betel-root. All smoke
“ tobacco, and drink, besides fish-broth, the liquors
“ used by the Russians, an infusion of rye-meal, soured
“ by fermentation, called *Quas*, which is a pleasant
“ liquor; *Braga*, a small beer; strong beer, and Russ
“ brandy.

The

“ The Tschoulyms were formerly Pagans, of the
“ sect of the Schamans. In the year 1720, a great
“ number of them were converted to Christianity, by
“ the zeal of Archbishop Philotheus; but they are
“ now merely nominal Christians, and adhere chiefly
“ to idolatry, in private. They place, however, an
“ unlimited credulity in the efficacy of the crucifix,
“ but retain the Pagan ceremonies of their ancestors,
“ as much as possible. They abhor pork, and eat
“ horse-flesh, even that of diseased animals; and often
“ sacrifice to their idols, in secret.

“ The baptised Tartars of this tribe solemnize their
“ marriages in churches, but keep up to the old na-
“ tional ceremonies. He who negotiates the mar-
“ riage, takes a new Chinese pipe and tobacco, goes to
“ the young woman, and, having made his propo-
“ sals, retires, for some minutes, leaving his pipe and
“ tobacco on the table, which, if her friends take a
“ whiff or two, denotes, that the proposal is accepted,
“ if not, the pipe is not touched. If he acquiesces,
“ he settles with her friends, concerning the quantity
“ of cloaths, fur, or cattle, that is to be paid for the
“ bride, which, in money, amounts generally from
“ five to fifty rubles. After the marriage-ceremony,
“ the young couple sleep in a new hut, built along-side
“ of that belonging to the young woman's father; and,
“ between these huts, a fire is kept up all night. The
“ sports on this festival are, dancing, feasting, &c. as
“ among

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Reading sculp.

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“ among other Tartars. The bridegroom is obliged to
 “ wrestle, with the male relations of his wife, by the
 “ light of the before-mentioned fire. In these contests,
 “ the husband must conquer; and, if he throws his
 “ antagonist without assistance, his strength is very
 “ much commended. The nuptial bed is a piece of
 “ felt, spread on the ground, on which the bride re-
 “ fuses to lie down, imploring the interference of
 “ some female friend. This friend, a married woman,
 “ gets the better of her scruples, gives her advice, and
 “ is rewarded with a handsome suit of cloaths, for her
 “ kindness (See the Plate).⁺ If the young lady cannot
 “ produce, the next morning, Mosaic proofs of her
 “ chastity, the husband steals away, ties a parcel of
 “ herbs about his head, and, as a punishment to his
 “ perfidious wife, does not return, till he has ob-
 “ tained satisfaction from him who has robbed him
 “ of his honour. This settled, all is forgotten.

“ When a woman is near her time of lying-in, she
 “ calls in the assistance of her female neighbours; but
 “ they have so little knowledge of midwifry, that
 “ numbers of infants are destroyed in the birth, and
 “ many others have navel-ruptures. The priest names
 “ the child, though the parents give it a fresh name
 “ afterwards. The national names of the boys, are,
 “ *Ouliguéyak, Kouguitschak, Mischagh, Koulon, &c.* that
 “ of the girls, *Keguenek, Patan, Paremba, &c.*—
 “ Children

“ Children go by these names, and not by those given
“ at their baptism.

“ Their regular manner of life, frugal, hard, and
“ exempt from cares, keeps them in health; but,
“ when they fall sick, or wound themselves, their
“ sovereign remedy, both internally and externally, is
“ the gall of a bear, and some superstitious appli-
“ cations. The small-pox occasionally makes great
“ ravage among them. They have an extreme dread
“ of death; and, from a persuasion that the soul of a
“ deceased person returns to seek its surviving rela-
“ tions, and pursues them in union with the body, on
“ coming from a funeral, they jump several times
“ over a fire, conceiving, by this precaution, they
“ can prevent the deceased person from following
“ them.

“ The language of these Tartars is a mixture of the
“ Tartarian and Mongol; but has so many words pe-
“ culiar to itself, that it might be taken for a different
“ language. They are neither cunning, nor stupid;
“ but tractable, attentive, eager for instruction,
“ and well-skilled in what they learn. When they have
“ nothing to dread, they are frank, honest, and com-
“ plaisant; but when they have any thing to fear,
“ or apprehend, they are sullen, and deceitful. They
“ are friendly, and attentive to one another; but lazy
“ in

“ in all kinds of business, and slovenly and filthy in
“ their way of living.

“ They keep neither pigs nor poultry. Fishing and
“ hunting is their chief employ ; and the latter enables
“ them to pay their tribute. Every man, capable of
“ going a hunting, is obliged to pay the state three
“ marten-skins annually ; or, in lieu of them, three
“ elk-skins, three fox-skins, and 24 ermine-skins ; or
“ any other furs, equal in value to three marten-
“ skins. The women are busied in spinning, weav-
“ ing, and sewing ; and, as this takes up all their
“ time, they seldom stir out of their huts, and look as
“ if they were smoke-dried.”

In our way, we saw several scattered tumuli ; which
are seldom, if ever, to be met with, but in the neigh-
bourhood of some lake, or river ; or on the finest,
and most elevated spots of a field, the bottoms of
mountains, and in flat vallies. Several I saw, that
reminded me of the old giant's graves, or beds of he-
roes, found in the same form, in some parts of Ger-
many ; particularly in Mark-Brandenburg. These
consisted of little hills of earth, round which were
stuck, in the ground, some large, flat pieces of rock,
and some had three little, stone posts, set near each
other.

The Tartars who now inhabit these districts, acknowledge the nation from whom they derive their origin, as their ancestors. It is an old story among them, that formerly there were two brothers (perhaps only nationally so), one of whom, with his people, dug a great deal of gold and silver, out of the mountains; and the other was rich in cattle, and people: that the latter had often so deprived the former of his treasures, and molested him, that he sought refuge among the princes of China, who allotted him, and his people, a tract of country, towards the east; and from these last they sprang. In the graves, which, differing in external appearance, are probably of one and the same nation, no other than copper tools and arms are found, and some few gold and silver ornaments; generally, no other gold than what is beaten out into thin leaves.

During my stay at Krasnojarskaja, among the old copper, dug out of such graves, and offered me by the peasants, I found copper points of lances, a kind of light battle-axe, daggers elegantly wrought, blades of knives, whetstones, points of copper and bone-arrows, copper scythes, similar to those now used in Siberia, several flat, cast figures of elks and rein-deer, stags, chamois, and wild sheep. In these graves are sometimes also found wooden frames, in which the dead bodies have been laid, with the figure of a chamois, fastened on the fore post of such a frame, and also some
little

little white stones, in form of snails, called, in Latin *Cyprea nodosa*. I shall, perhaps, give a further account of the nature of these tumuli.

In this neighbourhood, I passed a farm, belonging to a Tartar of Tomskoi; and also a country-residence belonging to the same person, elegantly built of larches, with a terrace on the top. Near this house, are several houses, built in the Russian manner, belonging to some of his relations. Here will also be built a church for the converted Tartars, hitherto belonging to the district of Scheresch, which this patriotic Tartar is taking all imaginable pains to reduce from their wild, savage state, to agriculture, and more social life.

In ferrying my waggon, in the morning early, over the river Tschoulm, on the 27th of September, the boat which carried my baggage, was unfortunately overfet in the middle; but as the water was not more than seven feet deep, it was, with some difficulty, drawn out again; all its contents, however, were so wet, that I was obliged to stop, till noon, to dry them. The next day I halted, among another tribe of Tartars, called *Katchinzi*, whose jurts, or huts, were erected at the bottom of the high mountain Tarbig, where the white river Ujus streams, and spreads itself along a fine, sandy vale, in which are several bitter lakes, and salt-spots, which Mr. *Gmelin* visited, and from which

the district of Krasnojarskaja is supplied with salt. Having spent the night here on the 28th, I had an opportunity of observing and enquiring into the way of living of these wealthy Tartars; with whom most others, living on the upper Jenisei, agree, in many points, and seem to have a common origin.

These Tartars, who distinguish themselves from the rest, by the name of Katchinzi, do not consist of more than one hundred men, who keep possession of the fine pasture-grounds between the Yjus and Abakan, on the western side of the Jenisei. To judge of them by their language, they are true Tartars; but they are bastards in their features, dress and manners, of which they have adopted many of the Mongolian; because, probably, they were under the yoke of the Kalmucks, and had thus a communication, as neighbours, with the Mongols: otherwise, they have many Mongolian words in their language, which a Tartar of Casan does not understand, and to whom their expression and pronunciation appear strange. The men shave their heads, like the Kalmucks; and leave only a half-circular whisker on the upper lip turned up, and a tuft on the under lip, or chin. Most of them, especially the younger ones, make a tail of their black hair, on the hinder part of their heads; yet they do not shave, or cut off the rest, but let it hang, about five or six inches long, about the head.

In winter, they usually wear no shirt ; but a long skin, furred within, on their bare bodies, with narrow sleeves. Most of these furs are deer-skins, which the women tan with the liver and brains of the same animal, for 24 hours, then make them soft over their knees, by rubbing them with a piece of wood, particularly adapted for this purpose. The richer, and more noble among them, wear sheep or lambs furs ; and, at feasts, and public solemnities, upper garments of cloth, and silken under-ones. But the common people, besides their furs, and boots, wear nothing but a pair of white, coarse, linen drawers, or trowsers, which are made by their wives, from the hemp-nettle, growing in their vallies, and which they call *Kender*.

The dress of the women differs little from the common dress of the Kalmucks, and consists in two tresses of hair, hanging down their shoulders, and a round cap with a broad, fur border, a knot of fringes on the top, and two pieces of silk hanging down from behind. Girls, till the day of their nuptials, wear a little round cap, flatted behind, without any fur border, but with a red fringe, tassel, on the top. They braid their hair into nine tresses ; three of which hang down the neck behind, and three on each side the head. The womens garments are elegantly cut out, especially their furs. Some married women wear a breast-plate, or a collar, set with beads. Children run mostly naked

about the jurts, or yourts. I call them sometimes yourts, because, as I have observed before, the jod, γ , in Tartary, is sounded like our γ .

The jurts, or tents, in which they live in winter, are spacious, covered with felts, and similar to those of the Kalmucks, and Kirgese. All live (the rich not excepted) in a manner uncommonly filthy and brutish, never washing any vessels; but, as soon as they are emptied, put them away, and, when they want them again, use them in the same state. Those who call themselves troublesomely clean, will only rub them a little with their dirty hands. Their household-furniture consists of iron kettles, wooden cups, and birch-bark troughs. They make milk-brandy, as do the Kalmucks; and, during summer and autumn, whilst their brandy lasts, are seldom sober. They are all fond of smoking tobacco, women as well as men; and they will smoke 20 times out of the same Chinese pipe. Their greatest dainty, and most common food, next to meat, is barley, or rye-groats, baked brown in a pan with flour, over which melted butter is poured. This dish they call *Kasch*, and eat of it at any time of the day, when they are hungry. Besides this, they boil, and eat the stalks of cow-parsnep (*Sphondylium*), and all sorts of wild roots, as piony-roots, reed-mace, red lily roots (*Lilium pomponium*), and the dog's-tooth, (*Erythronium*), which they call *Befs*.

Of

Of all the Tartarian tribes I have yet seen, this is the nastiest, the most inhospitable, and the most treacherous. They do not spare even one another; are very ill-behaved when drunk, and often attack the Cossacks, sent, by order of the state, to restore peace and harmony. They are divided into ulusses, or which each has a head, whom they call *Knafzi*, or little princes. They pay their tribute, or taxes, in furs or a competent sum of money; and, when they pay this tax, are usually heated with strong liquor, and seldom return without a quarrel and bloodshed.

Their wealth consists in cattle, which feed, the whole winter, in the fine, mountainous step they inhabit, and retreat, in summer, to refreshing and delightful vales; of course, they must thrive. The mountain-air, however, prevents their growing large. Their horses are excellent hunters, light-coloured and slender, and carry their slit noses in the wind; for they always slit the nostrils of their horses. They water them without the least reserve, though in the most violent heat, except in spring-time, when they deem it hurtful; but no over-heated horse will they suffer to eat, for the first two hours. Their oxen and cows are speckled, lively and strong, but small in size. Their sheep are a medium between Kalmuck and Russian; their noses are more bent, and their ears more hanging; have the same kind of wool, and a fat tail: some have horns,

some not; and many rams have four and six horns each. Their general colour is white, with black or speckled heads and breasts. Sheep, quite white or quite black, are rarely seen.

I could learn but little of the religious ceremonies of this people. They are true, and very rank heathens. They pray to their good god, turning their faces to the east; dreading more a bad Being than a good one, and offer it sacrifices, that it may not hurt them. To this evil Being they offer a horse, at a spring festival; which must be of a particular colour. It is led to the altar, and incensed with the smoke of the herb *Irwen*, which is a species of fragrant wormwood, washed, and sprinkled with milk, which, during their prayers, they scatter in the air, and throw into the sacrificial fire; and, after having tied a red and white rag on the fore-part of the mane, and on the tail, they turn it loose among the herd. These sacred horses are called *Isik*; and the ceremony above-mentioned, is repeated annually; during which a forcerer, or *Kamno*, acts the principal part. The same bad Being, as far as I could understand, is represented by a house-idol, which they call *Tous*, and which we find, on the eastern side of every tent, stuck on a stick, split like a fork, or tied on, upon a band, across two coarsely carved figures, having the resemblance of two birds, each bearing a woodcock's feather; so that the whole has the appearance of a two-bodied bird, with
extended

extended wings. Between these two, little, carved figures, hangs a piece of fox or ermine-skin, and a long tail of split sinews, interwoven with horse-hair.

In the yourts, or tents of the rich, I remarked, that there was, between these two pieces of wood, a wooden hoop or circle, with a carved beater tied on it; probably a representation of the magic drum of the Kamno, who made and consecrated the idols. Besides the forked stick, are two other sticks, placed between the ropes that hold the tent together; one carrying a red, and the other a white rag, commonly accompanied by a blue one. These three colours seem to be sacred among the Tartars; and the same are chosen by their forcerers, or Kamnos, for magic robes and ornaments. These sticks and rags are sometimes on one side the idol, and sometimes on the other. Many tents, especially those of the poor, have only, in the forked stick, the fur of a fox's tail, and, behind, the end of a sheep's tail, with its wool. On both sides these ornaments, hang little rags or blue cloth, and down the band, hangs a thick cord, made of brown and white sheep's wool, twisted. Besides this, there are sticks, with white and red rags. Some hang up only an ermine skin, in a stick; these I found on the east and west sides of the tents; whereas the sticks, with the rags, were only on the eastern side. They do not suffer any one to touch these sacred things, and often pray
about

about them, when they are in want of any thing. At the spring-feast, this idol is also incensed, over the fire, with the herb Iwen; therefore, looks much singed. In many tents, where I have seen the idol, I have seen also this herb, fixed up with it.

“ Their forcerers, or magic priests and priestesses,
“ make use of small drums,” says *Gmelin*, “ in their
“ incantations, as do the Laplanders; and are distinguished, in dress, by a quantity of mishapen idols,
“ rudely cast in iron, which are fastened on their
“ garments, together with the claws of birds, and
“ strips of cloth and furs. Their caps are generally ornamented with a border of lynx-skin, and a bunch
“ of owls feathers.

“ They have as many wives as they can maintain
“ or purchase; but seldom has one man more than
“ four. The ceremony of asking in marriage, is like
“ that of the Tschoulyms, excepting only that with the
“ pipe of tobacco is left a cup of brandy. If the pipe
“ is smoked, and the brandy drunk, the proposal is
“ accepted. Six months after this, the bridegroom
“ comes, and courts the young woman in the same
“ way; the price is then agreed for, which is from
“ five to 100 head of cattle: but if the suitor be poor,
“ he will work for the father-in-law, for three, four, or
“ five years, in order to obtain his daughter. During this time, if any richer, or handsomer gallant,
“ applies

“ applies for the girl, he carries her off, seemingly
“ against her inclination; and thus shortens forma-
“ lities. The injured lover, who perhaps has waited
“ a year or two, accompanied by her friends, pursues
“ the fugitive; but as the runaway-couple seldom fails
“ to improve that time, which the other loses in pre-
“ paring for the pursuit, and as the girl gives the
“ preference to the pretended ravisher, all the labour-
“ ing lover can obtain, is a competent recompence for
“ his past services. Should the betrothed damsel die,
“ before the performance of the marriage-contract,
“ the price paid is withheld, for the purchase of her
“ sister; and if she has no sister, the suiter loses his
“ money, or his labour. If the young man dies before
“ the wedding, the girl is the property of his father,
“ who takes her home, and leads her to his ha-
“ ram.”

When all preparations for the wedding are made, and the bridegroom arrives with his friends to fetch the bride, his parents and relations are introduced to the bride's father's tent, who sits at the upper end, with the mother; and all the rest sit round in a circle, or stand out before the tent. The bride then falls down before her parents, bidding them farewell, with tears; and takes her leave of her sisters and relations. The cries and lamentations of all the women present, now become general; and the bridegroom leads the bride away, by the hand, to another tent prepared for them.

them. The whole day, then, and many following ones are spent in feasting and diversions. Sometimes, a bride shall be secretly carried off by a rival ; in which case the *argumentum baculinum* takes place, and the law of the fist decides between the parties. Should the bride be unfaithful to her lover, or commit adultery, there are various proceedings, which end in satisfaction being made to the lover, or the husband.

“ After the marriage, a father-in-law is not permitted to see a daughter-in-law ; nor she to look on him ; and, if they meet by chance, she falls flat on her face, that she may conceal it. A husband dissatisfied with his wife, may return her to her friends, without any formal process, though it be two or three years after marriage ; but then he is obliged to maintain the children, and loses the money he paid for his wife.

“ There is no disease peculiar to this people ; except that a great number of the girls, in the time of their menses, are in a state of furor, or phrensy, from which they do not return for many days. The small-pox, whenever it appears, makes great ravages among them. In cases of sickness, they have recourse to the magic priest, who performs sacrifices for their cure, even in the venereal disease, which is no uncommon complaint.”

They

They bury their dead without coffins, and in their usual dress; put some few necessary utensils into the grave, and cover the corpse with boards, before they shovel in the earth, that the earth may not touch it. On the grave-hill, they place a drinking-cup, and leave it there. At the expiration of a year, from the day of interment, the relations of the deceased visit the grave, first lament the loss of the deceased, and finish with drinking the strong liquors they bring with them, out of that cup they left; and each drinks out of it so often, that they generally return very merry from this mournful visit.

For all their diversions, they have but one musical instrument, called *Jailtaga*. It is a box of fir, about four feet long, and three inches broad; the upper part open, over which six wire strings are stretched. It is played on with both hands, and produces treble and base; it is used with the left hand, and little with the right. To tune this instrument, they place a bridge under each string, and shift it, till it produces the tone they wish. Their maladies are like those of the Kalmucks; and so are their dances.

On the 29th of September I left these people, passed over a mountainous district, and got before a great salt-lake, *Bylykul*, 52 miles in circumference. There I met with a number of rare plants; and, among these, one that has not yet been described by botanists. It is
a species

a species of madwort (*Alyssum*), which I shall give a description of, when I meet with it more in perfection than at present. Not far from the Bylykul, we changed horses, and continued our road till we came to the mine Itkulskoi, where we spent the night. The works here are suspended; but they have dug to the depth of 18 fathoms, and found a fine, lazuli ore, which contains, in 36 pounds of raw stone, 15lb. of copper, nine drams of silver, and 13 drams and a half of gold. A new mine is opened close by, and the peasants work here for their head-tax. The Jenifei here is 300 fathoms wide; we crossed it, passing many islands in the middle, where grew a great quantity of wild hops, and, on the other side, found ourselves, on the 2d of October, in the fortress, Abakanskoi Ostrog.

This is a wretched, decayed place, has a wooden church, and but few buildings; but a governor resides here, who has the command of all the district round it. The climate is however mild; and an inhabitant of Little Russia, here settled, has begun to cultivate tobacco, and intends to plant fruit-trees, and breed bees. About this place, there are abundance of rare, little birds; the snow-bird, the cross-bill, the water-wagtail, the titmouse, and wood-pecker; which continue here the whole winter. The inhabitants told me that, two years since, a number of white spotted bears had been seen here, who seemed to have travelled from far, as they were quite lean and weak, and so hungry, that they ran into some of the neighbouring villages, where many had been killed.

During my stay, here, I saw two white sparrows, but none of my hunters could kill any. I would willingly have spent my winter here; but, there being no comfortable apartment to be had, was obliged to look out for proper accommodations in Krasnojarskaja. The winter was fast approaching, and being afraid of the river's freezing, I thought proper to set out on the 4th of October, it being necessary to cross the Jenisei, to go to Krasnojarskaja.

On the 5th, being near the river, we saw two floats coming down from the iron-manufactory established a little higher up, and capable of receiving all our wag-gons. I had thus an opportunity of going to Krasnojarskaja by water, which was at the distance of 75 miles. This manufactory was erected 16 years ago, by a merchant, whose son is now the proprietor. It belongs to the district of the supreme mine-office at Catherineburg, though at the distance from it of 1875 miles. Its situation is delightful, and its mill-head 190 fathoms long. The works here consist of five smelting furnaces, two blasts with double receivers, and several forges and hammer-works.

All things being ready for our departure, we set off on the floats, October the 8th, at noon; a third part of this passage, at high-water, is often made in one day; but we were unfortunately delayed, by being stranded on a sand-bank, by the imprudence of the watermen,

termen, and could not get off. With hard labour, however, we got clear in the space of three hours; and soon after moored along side of the village Of-scharskaja, where I took up my night's lodging. In the banks of the river, opposite this place, they collect a great deal of that which is called stone-butter. It is gathered here every year, from among the clefts of the black, allum slate, of which this bank consists; and is sold at Krasnojarskaja, at 15 or 20 copecs per pud. The common people use it as a medicine in dysenteries; also against hemorrhages of lying-in women; and in venereal disorders; and likewise, as an emetic, for children. In case of necessity, they use also the stone-vitriol, instead of vitriol, to dye leather; and blacksmiths use it, to make steel.

Next morning, the 9th, we unmoored betimes, and continued our passage down the Jenisei. Towards night, we reached the mouth of the river Mana, and the village Ofjanskaja, and slept there. This village is a rare example of the propagation of mankind, in the wild desarts of Siberia. The whole village, a few houses excepted, is inhabited by people originating from one stock. Here are 25 wealthy families, and almost as many others, of the same origin, who are settled in the villages along the Jenisei. The father of this numerous posterity, one Juschkof, came, two centuries ago, into this district, from Russia; and it was, at that time, inhabited, and is molested still, by
the

the Kirgese. He had seven sons, one of whom was killed by the Kirgese; the rest settled and increased his progeny, and became fathers of 50 families.

Their indefatigable industry in hunting, seems to be hereditary to the whole posterity, for they are all people of property. With respect to hunting the wild uninhabited mountains upwards, the river Mana affords them an excellent opportunity; not to mention the smaller animals, as weasels, squirrels, &c. they catch fables, lynxes, and bears, in abundance. The musk is also very abundant there. They catch it in autumn, and in the beginning of winter, with snares and traps, in which the animal shortly dies. The musk-bag, which is by far less fragrant than the Chinese, is sold at from 20 to 30 copecs; and is used, like their deer furs, as it surpasses every fur, by its softness. The river Mana supplies them, likewise, plentifully with fish; and, besides this, they apply themselves to agriculture, and have some extensive farms upon the river. It is but 15 miles from the village we last slept at to Krasnojarskaja; we reached that town on the 10th of October, 1771, in good time; and here I took up my winter-residence.

With this I shall end the second part of my account; and shall give the reader the observations I made, in the course of this year, in the beginning of the third part.

END OF PART II.

VOL. III.

S

T R A V E L S

THROUGH

Siberia and Tartary,

PROVINCES OF THE RUSSIAN EMPIRE;

By S. P A L L A S, M. D.

PROFESSOR OF NATURAL HISTORY, &c.

PART III.

“ **N**OT wishing to tire our readers, by following
“ our Author in all his minute and particular
“ accounts and descriptions, of every wood, lake,
“ and mountain, and every little village and brook he
“ passed, nor in measuring every inch he travelled, as
“ *he* has done, we have contented ourselves with giv-
“ ing the great outline of the road he journeyed, and
“ circumstantially relating, from his pen, every thing,
“ even

“ even in natural history, worth remarking, and what
“ we could suppose any class of our readers might
“ wish to be acquainted with. We have, however,
“ passed over the nature of the roads, and the bad
“ accommodations he met with. Suffice it to say,
“ that being equipped, at government-expence, with
“ such passports and necessaries as a traveller, in such
“ a wild and dreary country, might stand in need of,
“ such as credit, tents, provisions, forage, cloaths, me-
“ dicines, mathematical instruments, tools, men versed
“ in various sciences, draftsmen, huntsmen, interpre-
“ ters, guides, escorts, servants, waggons, &c. he
“ traced every navigable river, from its mouth to its
“ source, travelled all the boundaries of the empire,
“ from fort to fort; and at these places got a change
“ of horses, occasional escorts, and fresh equipment.
“ In some places, he traversed mountains; in others,
“ forced through woods, almost impervious; in others,
“ floundered over marshes; and, in others again,
“ forded rivers, or crossed them in ferries, or on rafts:
“ sometimes encamping in the desarts, and often
“ sleeping in the open air.

“ In some parts of Tartary, the roads are tolerably
“ passable; the customary highways are known from
“ place to place, by the annual passing of caravans: there
“ he found, occasionally, way - houses, with relays of
“ horses, and some accommodations. Where there were
“ no such houses, unless he was in the vicinage or

“ some fortrefs, where the commanding-officer accom-
 “ modated him with regimental horfes, and an ef-
 “ cort of the troops; he was under a neceffity of en-
 “ camping on the road, and refreshing the fame
 “ horfes, by food and reft. A number of difficulties he
 “ encountered, as we *have* feen, and *fhall* fee; but an
 “ inquisitive mind, which is panting after know-
 “ ledge, fears no danger, furmounts every obftacle
 “ in its way, and purfues its end with unremitting
 “ ardour.”

Krafnojarskaja, Ocz. 1771. After my arrival here,
 the weather was uncommonly mild and delightful, as
 it ufually happens in this feafon, throughout the south-
 ern diftrict of Siberia, and almoft in all eastern, moun-
 tainous countries, At the latter end of the month,
 however, winter fet in; the whole diftrict was expofed to
 ftorms, between N. W. and S. W. and the rivers drove
 a great deal of ice. It rained and snowed till the 18th
 of November, when a froft fucceeded, and fhut up the
 river Jenifei entirely. The rapidity of this river ge-
 nerally keeps it open till the middle of November, and
 the ice diffolves again in April.

In the nights of the 7th and 8th of December, the
 cold was feverely felt; the thermometer mounted
 190° on the 9th in the morning, to 194°; on the
 10th, 203°; on the 11th, 209°; and on the twelfth,
 202°. It then snowed; but, with the beginning of
 the

the year, the cold became so intense, that, on the 5th of January, the thermometer pointed at 201° , on the 6th, 206° ; the 8th, 212° ; and on the 9th, 196° . A violent storm, that blew from the north-west, concluded this severe weather on the 13th, which brought on continual, western showers that augmented the snow, and the winter continued moderate. The sun began to shine warm in the latter half of February, and the snow thawed away from most summits of the neighbouring mountains.

The town, or city, has changed but little in the last thirty years. It is almost the same as it was when *Gmelin* was here. The stone-cathedral is not yet finished; the inhabitants are as few, and it has received no increase of buildings. Perhaps the indolence and debauchery of the common citizens, nursed by the low price of corn, and the great plenty of provisions, may be the cause of the bad progress of this place. In every other respect, Krasnojarsk is most advantageously situated for commerce. It is, at present, a place through which all Russian merchants pass to trade with the Chinese; and it is here, and at Tomskoi, that passengers eagerly buy up common fables, and other furs, wanted by the Chinese. From the months of November till February, we see many thousand, hired sledges pass, in caravans, through this town, which do not stop at all, because the merchant to whom the caravan belongs, rides be-

fore, and purchases the furs he wants, chiefly with ready money; of course, Russia goods are much dearer here than in Irkuzkaja. Chinese goods are also at a more than reasonable price in the shops here, because the sale of them is too inconsiderable, and there are but two or three merchants capable of dealing in such goods. They, therefore, put such a price on them, as they think proper, and certainly not to their disadvantage.

The productions of this district are, in general, cheaper than the productions of any other part of the Russian empire; though no province complains of higher prices. I shall scarcely be believed, when I declare that, on my arrival in Krasnojarsk, a pud or 36lb. of rye-flour would sell for no more than from $2\frac{1}{2}$ to 3 copecs, each copec a halfpenny English; wheat-flour, from $4\frac{1}{2}$ to 5 copecs per pud; beef, from 15 to 20 copecs; a cow, for one ruble (4s. 6d. English); good horses for three rubles, and sometimes for two; a sheep, from 30 to 50 copecs; and hogs, at the same price. But the price of corn seems to have risen a great deal, owing to the great quantities transported on the rivers Tschoulym and Ob, to the distant manufactories, mines and fortresses; to a brandy-distillery, at no great distance; and to an Imperial magazine; and yet the price of rye has not risen more than five or six copecs per pud.

Hence

Hence may be seen the great fertility and abundance of this district; for though, within the town, there is great scarcity of buyers, as most of the inhabitants grow their own corn, and breed their own cattle, yet the great exportation of corn, in the barren districts of the regency of Irkuzkaja, and more to the north about the Jenisei, one would imagine would be sufficient to raise the prices higher, if the fertility of the country was not so extraordinary. There has never been an instance of a failure in the crops; and it is reckoned but a moderate harvest, when summer-rye produces ten-fold the seed, the winter crops eight-fold, barley twelve-fold. In the worst years, wheat produces six-fold; and oats, seldom less than twenty-fold. Common buck-wheat is but little sown here; and, where it is sowed, it must be done in some worn-out piece of ground, or the extraordinary richness of the soil, would spoil the crop. In the worst ground, it will bear from twelve to fifteen-fold. This very rich soil generally in the heights and vallies, is every where black and light, and forbids the use of all dressing. A fallow of one year will improve the lands for ten or fifteen years, and sometimes for a longer time; and should the fertility of this soil decrease, the husbandman has sufficient land in the steps, that will answer every purpose. The new fields are commonly prepared after the summer-seed is over. They burn it up first in the beginning of June, plough it once more at the end

of the month, and it is then fit to receive the seed of the winter-crop in August: or they will sow it with wheat, the ensuing spring; in which case, such new land is to be ploughed a third time; for there is no winter wheat throughout Siberia; though it is so common and useful in the districts of Casan, and on the Kama. After the first crop, such a field is left, during the next winter, unploughed. In the fourth summer, they lay it up, after ploughing it twice; and such lay-lands are sown in the autumn, or the following spring; for most grounds bear two years out of three, and high, dry, and sandy spots, at least every other year; and are fit for all sorts of corn, hemp, and pease.

I have been more circumstantial here than I should have been, in order to give an account of the mode of agriculture in the eastern parts of Siberia; and to shew how happy the countryman must be in these foreign districts, and how much they deserve to be better peopled.

The jurisdiction of the regency of this town spreads, in length and breadth, over 450 miles of ground; and yet is not inhabited by more than 15000 men; among whom are 3000 Tartars, who live merely by hunting, and breeding of cattle: yet this district surpasses the more eastern countries of Siberia in population. But he who considers that Siberia has not, but within these

two centuries, been much more peopled than North-America, and was then as unknown a wilderness as that, must be surpris'd at the present state of the country, and the great number of Russian inhabitants, who far surpass the natives, in skill and industry. The discovery, and rapid conquest of so vast a territory, unknown before, extending to the eastern ocean, must be an everlasting monument of celebrity to the genius, intrepidity and perseverance of the Russian nation; and its population, now carrying on to the utmost, may be looked upon as a master-piece in policy.

The Siberians pay but little attention to culinary herbs, though they thrive well in Krasnojarsk, and all the southern districts of Siberia. The early, white frosts in autumn, do less damage even to the most tender plants, than the later frosts in May; of course, gourds and girkins come to perfection in the open fields, when melons and water-melons will scarce thrive in gardens. They have begun to cultivate tobacco, and with great success. This plant finds many purchasers among the Pagan nations; but they do not know the proper time when the leaves are to be taken off, or how to prepare them. The tobacco, therefore, of Krasnojarsk, on account of its greenness, goes by a different name from other tobacco; and the best price it will fetch, is about 25 copecs per pud, whilst the common leaves, grown in and about Udinskaja, will

will fetch 60 copecs. The inhabitants of this place carry on a good trade in wild hops, which grow plentifully in the islands of the Jenisei, and bring here a number of buyers in autumn. They sell at the rate of from 50 copecs to one ruble per pud. They are chiefly carried to Jeniseikaja, Irkuzkaja, and those districts upon the Tunguska where there are no hops. What they do not sell, they keep for their own brewing; and hereby indulge their debauchery.

Among the usual, wild growths of the mountains of Krasnojarskaja, the rhapontic, or rhubarb, deserves our notice. When the medical college, at Petersburg, is in want of any, the people here engage to procure a certain quantity, and carry it to the town-house, at a certain price. To do this, they employ a number of mountaineers to dig the root in autumn, in places beyond the Abakan. The best is brought from Udinskaja, and is dug in the mountains, about the rivers Uda and Birjussa. Commonly they are roots of the rhubarb (*Rheum undulatum*), and some other such like species, which seems to be different from what botanists call *Rhaponticum*. I am at a loss to know whether the moistness of the soil in which the Siberian rhapontic grows, about the mountain-brooks, must be ascribed to the climate, especially the wetness of the last summer, when all the old rhapontic-plants were rotten in the principal knots of their roots, which are often very large. The innermost parts of the thick
root

root is always found, there, changed, quite to the peel, into a yellow-brown, marrow-like matter, bitter, and astringent to the taste: it is only in the cylindrical continuations of the roots, that there is any good medicinal virtue; and, therefore, the Siberian rhapontic is vulgarly called, on account of its form, *Tscherenkowoi Rewenn*. During the winter, 1771, they sent, from Krasnojarsk to Tobolskoi, 511 puds; from whence it was conveyed to Petersburg, for the use of the college. But these roots might have been gotten better and stronger, if the rhapontic diggers had more particular directions how to prepare it: for, as soon as these people have brought the roots home, they peel, cut them in pieces, and dry them in a gentle warmth; and hereby the root loses its most efficacious moistness, dries up, and becomes quite spongy, so as to be very unlike the genuine rhubarb, either in appearance, or strength. On the contrary, I took several rhapontic roots, which I received quite untouched, some from Udinskaja, and some from the Sajanian mountains, which I hung up in the cieling of a warm room, and, when sufficiently dried, I shaved off the medicinal parts of the root quite clean, and found them compact, and high-coloured, like the best Chinese rhubarb; and it was very little inferior to that in strength, and far superior, in taste and efficacy, to the rhapontic, prepared in the common way. Were it possible to find districts in the Siberian mountains, where the principal

cipal stem of the rhapontic is not rotten, I doubt not but all its roots, if prepared in my way, would be equal, at least very little inferior, in size, beauty, solidity, and strength, to the Chinese rhubarb.

Krasnojarskaja, like most parts of Siberia, abounds in all sorts of wood; and the finest timber may be felled, with very little trouble, from the steep mountains about the Jenisei, and floated down to this town. Except the plane, the elm, and the linden-tree, which are not to be found in the eastern part of Siberia, all common species of trees are to be met with in great abundance. There is also great quantities of cedars in the neighbourhood of the river Mana. About Abakan-skaja grows, on the Jenisei, abundance of fragrant poplars, whose resinous buds afford a delicious winter-repast to woodcocks, and gives their entrails a fine balsamic perfume. There is also a great deal of under-wood, of various denominations; particularly the hawthorn, and cottonaster.

Krasnojarsk is plentifully supplied, in winter, with game, and all sorts of furs. A liberty of hunting such animals, properly speaking, is only granted to the Siberians; who pay a tax for such leave, and who make hunting their principal occupation: yet the Russian peasant commonly devotes his indolent winter to the chase. They set traps and snares for all species of game,

game, and catch a great number of ermines, and other animals. These people will purchase, from the magistrates, a permission to hunt; and are at liberty to hunt with such a licence; but if they hunt, without obtaining this, run the risk of being caught by the Tartars, and chastised upon the spot, or put into the hands of justice, which always rewards the apprehender.

Sables are a common animal in the district of Krasnojarskai; and there are two species, some long-haired and greyish, and some short-haired and black. Those caught about this place are of inferior value. Wolves are much extirpated here, as they are in most parts of Siberia. Foxes, however, are very abundant in the open districts; and they bring, from the northern parts, black, and black-grey ones, of great value. Beavers and otters are also abundantly met with; and the latter are often sold at seven rubles each, and exported to the frontiers of China. Lynxes are not general, and reach to the same price; their parti-coloured fore-paws are sold separately. Hyenas are more abundant; and a black one will sell for four rubles. There are still a greater number of badgers; but as their skins are of little value, they are seldom killed, but when they are bad neighbours, or when their fat is wanted. Ermines are caught in large quantities. Whilst they were saleable, in the Chinese trade, a skin would sell for 25 copecs; but there is no buyer now
that

that will give a fifth of that price. The yellow weasels may be plentifully caught in the woody districts, and with little trouble. Those which by accident fall into the traps, or snares, are purchased by merchant-passengers, at five or six copecs each ; and are a favourite object of sale to the Chinese, who pay a very good price for them: of course, they are sold much dearer at Irkuzkaja, and are not carried into Russia at all. The pole-cat is not bought here, at any price ; though its skin is much finer in Siberia, and of a much whiter and more elegant colour, than in Russia.

Larger game, as elks, stags, deer, and musks, are in great abundance ; especially on the other side of the Jenisei. The Tartars pay a good part of their taxes in elk, and large stag-skins ; which the treasury takes for the use of the cavalry, at 60 and 120 copecs each. According, however, to a new regulation, the head-tax is no longer paid per head, but by whole tribes ; so that all the Pagan families in the district of Krasnojarsk, pay together 5262 sables ; yet the tax goes by the denomination of that species of fur notwithstanding, though the tribute is paid in other furs, or in money, rating a sable at one ruble.

Deers are so common here, that the whole animal, flesh and fur, will scarce sell for 15 copecs : hence their skins are mostly used, and sold for furs to travel in ; and the price for one, is 10 copecs. Musks, 1
observed,

observed, were here caught in great numbers. The males are sold, on account of their bags (*Struika*), from 30 to 50 copecs each; whereas the female, fur and flesh, will scarce fetch 10 copecs. They brought me, as a great curiosity, a female musk, quite white; and, afterwards, they sent me the white fur of a male.

Fish is not so abundant in this province, as in some other parts. The Katscha being shallow, like many other Siberian rivers, becomes stinking in winter-time, under the ice, and has therefore no fish. The Jenisei has but few branches; and, on account of its rocky bottom, and the rapidity of its stream, is very little fit for fishing. Fishes of passage very seldom come into it, from the north, or glacial sea. It has but one or two species of Russian salmon, and very few sturgeons; and husos are found in it, which are very delicious. They are, however, not easily taken; as they select such deep spots, in winter, as cannot be got at.

The whole district of Krasnojarsk, whose court of Waywods is subordinate to the regency of the province of Jenisei, and whose governor is subject to the military-office at Tomskoi, contains, at present, 9228 Russian peasants, 807 colonists, 128 exiled persons placed among the colonists, 2023 citizens and tradesmen (*Posatsky* and *Zechowye*), and 2994 Tartars of different

different tribes, who pay tribute, and are divided into six districts, are again sub-divided into certain classes, and who pay, in the whole, annually, 5161 rubles.

In January, Mr. Surjef arrived at my lodgings in Krasnojarsk, from a tour he had made, in the course of the last summer, along the river Ob, to the frozen ocean. I will give my readers an extract of his observations and papers, from the time of his departure.

He left Tscheljabynskaja on the 26th of February, 1771: his road, as far as Tobolskoi, produced nothing remarkable. In the latter place, he was most kindly received by his excellency Governor Tschitscherin, who gave him every necessary passport for the district of Beresowa; to which place he set forward, on a sledge, on the 8th of March. His road thither was principally all along the banks of the Irtsch, which are scattered with Tartarian, Russian, and, farther north, with Eastjaikian villages, through which he passed. The Tartarian towns reach only as far as Demjanskoi jam, at the distance of about 195 miles from Tobolskoi; but the Eastjaikian villages extend beyond Demjanskoi, and occur frequently. In some villages, the Eastjaiks live with the Russians; and, in general, as far as Beresowa, are apparently christians, having been baptised. All the way, as far as Demjanskoi jam,

skoi jam, the country is, in a great measure, under cultivation by the Russians and Tartars. From this place, northwards, they saw nothing but barley and oats, and very little summer corn, as it does not thrive, owing to the cold and moistness of the soil: they sow hemp and flax among it. The colewort gets no heads here, and grows loose in leaves. Leeks, radishes, turneps, and horse-radish, if the weather is tolerable, thrive pretty well.

Further down the river, into the steps, the country is not habitable at all, being wholly wood and deep mires, impervious at all seasons. The wood chiefly consists of underwood, and badly grown trees. The most common trees are, willows, dwarf-cherries, alders, white cornels, aspens, poplars, birches, pines and firs, which are seldom of a fine growth. The linden is not seen further north than 27 miles from Tobolskoi. Of small bushes and shrubs, the country produces red and black currants, the *uva ursi*, and several others. On both sides the river are lakes, which have a communication with the river, where the water is high.

Samarofskoi jam is the most considerable place between Tobolskoi and Beresowa, and is distant from the former town 412 miles, by water, and situated on the right of the Irtysh, in a low border, just underneath a higher and more mountainous country, only 20 miles beyond the communication of the Irtysh with the Ob.

The place was colonized in 1637, with several families from Demjanskoi, and the northern districts of the regency of Casan; and consists of 100 dwellings, and a church. The inhabitants have no agriculture; and, further north, up the Ob to the Surgut and Narym, no corn is sown at all, but is brought, by the Irtysh, from Tobolskoi.

In Samaroffkoi, horses do not thrive well; they die, in great numbers, for want of provision. Last year, the water was so high, that it covered all the meadows with slime, just before they were to be cut, and spoiled them. This district, however, is blessed with an abundance of fish and water-fowl, on which the Russian inhabitants, and Eastjaiks, have their chief subsistence. The Chinese moths are found, in this place, but no farther north.

Beresowa, called, by the Eastjaiks, Sumytwasch, by the Samojedes, Chucharn, lies on the river Joswa, at 20 miles from its mouth into the next branch of the Ob. It is irregularly built, and has not above 150 houses, mostly inhabited by Cossacks; but there are also two churches, and a cathedral, or mother-church, all built of stone. Without the town is a chapel, dedicated to St. Alexander Newskoi, of whom they tell a number of miraculous stories; particularly one of a cedar-tree's growing in the centre of the chapel, whilst they were building it. The inhabitants
are

are substantial, peaceable, and hospitable people, who have enriched themselves by fishing, hunting, breeding of rein-deer, and trading with the pagan and Russian merchants, who visit them. They pay little attention to the unwholesomeness of their situation; and, by intemperate drinking, bring on a great many diseases, and often sudden death.

Beresowa supplies Tobolskoi, and other towns situated on the river Ob, with frozen fish in winter, and dried fish in summer. From this place are brought half the blue and white ice-foxes, dressed and undressed elk and rein-deer skins, black and white bear-skins, red foxes, wolves, bad fables, a great number of beavers and otters, and abundance of other furs. For agriculture the country is unfit, like all others north of this. The environs of the town are low and marshy woods, of birch, fir, and cedar; the trees of which are not very tall. Of garden-stuff, some thrives very well. The fishery is astonishingly rich; and, from spring to autumn, they have an inexpressible quantity of large water-fowls, as swans, geese, ducks, &c. The most wealthy of the inhabitants keep, in the northern districts, large herds of rein-deer, under the care of shepherds; for this is the only domestic animal that will thrive well in the north. Oxen and horses cannot live there. Few of the inhabitants keep either sheep, swine, or chickens. Those who keep the latter, are obliged to shut them up, lest they should be torn by

the dogs; for as dogs are employed, in winter-time, to draw little, travelling sledges, to carry wood, and other services, a great number of them are kept; and they are the more useful, as they require little attendance, and will pick up their living on the remains of fish and fowl that is every where scattered, and particularly as they will feed on the water-rat, of which there are many in the Ob. But, in another respect, these animals are a nuisance, as they make an intolerable howling every morning, throughout the whole town; like the crowing of cocks, as soon as one begins, all the dogs of the town are sure to follow.

Beresowa lies about five degrees more to the north than Tobolskoi; according to the oblique direction of the rivers, the distance from it, by water, is 757 miles; by land, in the winter-road, only 675 miles. Notwithstanding the summer is short, it is sometimes very hot; and the weather, in winter, often so soft and mild, that the snow melts upon the roads. In 1771, the warm weather continued all August and September; but the frost followed so suddenly, that the rivers were frozen in the middle of October. The Ob usually freezes about that time, and is not open before the end of May.

Birds of passage arrive much sooner than the end of May, and continue in the lakes till they find, in the
rivers,

rivers, and in the northermost wilds, proper places to make their nests. Should there be still, on their arrival, any winter weather in the district of Beresowa, they make up the river into the more southern and watry districts upon the Irtysh; and, as soon as the weather becomes milder, draw down in crowds northwards, to people their cold and native home. Mr. Surjef spent the spring at Beresowa, collecting the rarest species of water-fowl, and their number is astonishing. The most curious birds he brought me were as follow: Of the goose kind, *Anser pulchri collis*; of ducks, *Anas fusca, nigra, marila, byemalis*, and *acuta*, which were caught in great numbers; the diver, *Colymbus arcticus et immer*. Of gulls, *Larus minutus*; of land-birds, the falcon, *Falco barbarus*, which builds its nest in the northermost mountains in summer; and the wood-pecker, *Picus tridactylus*. Every species of wild duck, small and large geese, common plovers and gulls, snipes, and other such birds, increase the crowd; and their number is above expression.

When Mr. Surjef had completed his collection of water-fowls, he proceeded on his journey to the sea-coast. In summer, there is no way to Obdorskoi-Gorodok, the most northern place of note, but by water; he therefore set out the 11th of June, with a huntsman, an interpreter, and six coffacks, in a large barge. The river had now so much overflowed all the

low lands and islands, that it looked like a vast sea; here and there a willow-tree, shewing its top above water. He arrived at Obdorskoi-Gorodok on the 14th, a distance, by water, of 225 miles. This place is called, by the Eastjaicks, *Pulnowat-wasch*; and, by the Samojedes, *Sola Chern*. It is situated near the 67th degree of north-latitude, and is erected on a mountain, on the border of the little river Polni, which, at four miles from thence, empties itself, on the right, into the Ob. Obdorskoi-Gorodok consists only of five houses, but a number of magazines and store-houses; and has, at a distance, the appearance of a very extensive village. It has a church, dedicated to St. Basil. The Russian inhabitants remain there during the winter, and leave it in summer; but many Eastjaicks repair there in winter, and live in demi-subterranean dwellings. Here resides an inspector, or Opekun, placed over the neighbouring Eastjaicks and Samojedes: he is a Cossack born, and commands an Ataman, and 25 Cossacks,

The district on both sides the Ob, is mountainous; and the mountains, which consist chiefly of a chertz-like slate, are very bare. Near Obdorskaja there are no other trees than some few willow-bushes on the border of the Polni; higher up that river are larches, pines, birches, and alders, and some few pine-trees. Near the icy sea grow some little larches and alders; but they creep upon the ground, like espaliers, or like
the

the shrubs in high mountains. In Obdorskaja the summer is very delightful, by the continual presence of the sun, though it be but short. During the long days, the sun, at night, is but one hour invisible; hiding itself behind an adjacent mountain, but does not sink below the horizon. At this time, at night, when near the horizon, it is very large, and its light so weak, that it may be looked at steadfastly with the naked eye. On the 30th of July, the sun set, so that the stars became visible. In winter-time, the long light does not last more than two or three hours, except when the brilliant, northern lights illumine the nocturnal hemisphere. About Obdorskaja one never hears the bustling noise which many of these phenomena make in the air. They commonly appear like bright bows about the horizon, from which issue some very agile, light columns. Seldom is a tempest heard here in summer; never above once or twice in the whole district: but thunder is commonly heard, as at a distance, rolling from north to south. The weather is scarce ever so warm, as to render a light fur-dress insupportable. On his journey to the glacial sea, Mr. Surjef felt but five days so warm, that he could say he sweated, or could go without a fur. In July, the northern winds begin; white frosts, and ice, is not uncommon, and the plants turn yellow. The largest radishes, and turneps, they can raise at Obdorskaja, weigh somewhat more than five ounces, but the leaves grow a foot long. No other garden-stuff thrives at all. The ground thaws only on

the surface; and, near Obdorskaja, the elevated flat soil becomes wet, nine, twelve, or fifteen inches deep; lower on, it is scarce six inches deep. Further northward, the ground is higher and sandy, to the depth of six or eight inches. In watry spots, we see bare ice, underneath the moss that covers them. No large cattle, brought to Obdorskaja, ever lived so long as five years. Horses can be kept no where north of Beresowa. Some were once brought to Obdorskaja, but they did not live a year. For this reason, they keep only rein-deer which are here at home, and multiply very fast, in spite of many disorders, and the danger of wild beasts. Of course, these animals make a considerable part of the property, both of the Russian and pagan inhabitants, of these northern lands.

Preparations for his further journey on the borders the glacial sea, detained Mr. Surjef till the end of June. He wanted provisions, and attendants, who were here increased by some Samojedes, and their wives, who offered their service as guides, and as interpreters; and also a great number of rein-deer to change; for these animals soon grow weary. The northern borders of Siberia, towards the coast of the frozen sea, is, to the breadth of some hundred miles, a watry, mossy, and woodless marsh, in which it is difficult to travel, even in summer-time; but, as I have observed, there being, underneath the moss, ice, or frozen

frozen earth, well-trodden by rein-deer; the light sledges of the Samojedes glide easily away on the moist moss surface, which would by no means bear a wheel.

On the 1st of July, Mr. Surjef proceeded on his journey; and the next day he went, in a boat, down the Polni, and across the Ob, and some other parts of the country, to the distance of 52 miles, passing several settlements, to a place where the rein-deer were in readiness, to convey him on. In one settlement, consisting of yourts, or tents, lives the governor of the Samojedes of Obdorskaja, and the Eastjaiks. His father was presented, at Moscow, by the present Empress, with robes, and a diploma; but died there before his return.

On the 3d, Mr. Surjef, and his suite, set out with rein-deer, and took the land-road inwards from the river Ob, straight north, over even, marshy lands, green with all sorts of reed-grass, and a few plants, with creeping willows, and large-leaved, dwarf birches (*Betula nana*), and several others, besides the *Arbutus alpina*; the more elevated, yet moist and loamy places, were ornamented with little, scattered larches. They also passed many lakes, of various extent; and, the same day, reached the river Chaja, which flows from the mountains, into the gulph of the Ob. The breadth of this river was 18 fathoms, the stream very rapid,
and

and the water as bright as chrystal. Travelling on, they reached, on the 6th of July, those mountains which make part of the northern Ural. The road here was very difficult for the rein-deer, some of whom dropped, and could not be brought upon their legs again, even by bleeding, which operation the Samojedes perform under their tail. After a good day's journey (which, in summer-time, does not exceed 15 or 18 miles, on account of the frequent changing of the rein-deer, and the loss of time on that account), they crossed two very rapid rivers, above 20 fathoms broad.

On the 8th, the Samojedes ran, till noon, before they could bring the rein-deer together, 70 of which were to go with them; and which, on account of tormenting insects, had retreated into cool vallies; of course, they could not get far that day. From the 19th to the 26th, they passed only a wild, barren country, full of capes and lakes, the icy sea in sight all the way, and pitching their tents at night, at which time they made fires to keep themselves warm; and as they passed through a country where there was no wood, they were obliged to take wood with them. The water of the frozen sea is so cold, that a bather, in summer-time, could not stay in it a few moments, without being benumbed; and it would be death to a delicate constitution. Having travelled along the coast, more than three weeks, the extent of Mr. Surjef's route was

was completed ; and, as the severity of the weather opposed a farther continuation, he set out on his return the 28th of July, and reached Obdorskaja again on the 14th of August. “ In his tour he collected a number “ of plants and marine productions, but the names of “ them would be of little amusement to a general reader, as none were very curious or new.” Who would believe that the remains of elephants bones, so frequently found in Siberia, should also be met with so far north ? Yet, it is certain, that the Samojedes find them in great abundance.

Before Mr. Surjef left the district of Obdorskaja, he made two other excursions, in spite of the severe, autumnal weather ; one with rein-deer, towards the Uralian mountains ; and the other, by water, to the gulph where the Ob flows into the ocean.

He set out for the first on the 18th of August, and returned to Obdorskaja on the 22d. In his way he crossed the river Sob, near its mouth, where it was 60 fathoms broad, and came to a granite mountain, whose summit reached the clouds, and was covered with snow, that fell, between the full and new moon of July. During the night they travelled along this mountain, where the wolves fell upon the rein-deer, and so dispersed them, that they could scarce get sufficient to bring them back ; for these deer accompany the sledges, though turned loose.

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The second tour he undertook, on the 25th of August, in a boat. On the 11th of September he returned from Obdorskaja to Beresowa; and, on his return to me, brought me a young sea-bear alive, and an enormous buffalo's skull, which he found in the earth, the breadth of which, between the horns, is 10 Paris inches, the breadth, before the horns, 13 inches, the length of the horn-holes, 18 inches, and the circumference, $12\frac{1}{4}$ inches.

Having thus given a short account of his tour, I shall speak of the pagan inhabitants, their hunting and fisheries; and shall begin with the Ostjacks, or Eastjaiks, of whom I trust I shall give a more complete account, than any that has been hitherto given.

“ *Eastjacks.* At the beginning of the 17th century,” says Dr. *Gmelin*, “ when the Russians had extended their conquests as far as the Jenisei, these Eastjaiks were in possession of the deserts, they now occupy along the banks of that river, and the rivers that empty into it. They were then near neighbours of the Samojedes, with whom they were in some measure mixed, In 1608, they not only submitted to Russia themselves, but their princes gave all their assistance, to bring the people settled higher up, into the same subjection.” Those on the river Ob, are one of the first Siberian nations that were discovered

covered and conquered by the Russians; and, like most Siberian tribes, since their conquest, have very much diminished, by the small-pox, and other diseases, formerly unknown to them; yet they still make a considerable body of people, especially in the district of Beresowa, extending up the Ob, as far as the districts of Narym, and Surgut.

They are, in general, middling-sized people, and short; not very strong, and particularly thin and lean. Their faces are disagreeable, pale, and flat, yet without any characteristic form. The ruddy and light-coloured hair that hangs about the head of the men, renders them still more ugly. Among the women grown to full age, we scarce meet with a fine face. The Eastjaiks are timorous, superstitious, and simple; but otherwise have a tolerable share of good-nature. They are, from their youth, laborious; being obliged to put up with a troublesome and bad way of living: but as soon as they find themselves a little above indigence, they are slothful, especially the men; and, in their whole, domestic management, very disgusting and filthy.

The dress, both of men and women, is singular; and consists chiefly of the skins of animals, and furs, which they prepare themselves. The richer wear shirts; but the common people wear their leathern coats next their skin. The man's dress is first a narrow under-fur,
with

with sleeves (*Mauliza*), which scarce reaches half-way the loins, having a hole above to put the head through, close behind and before. This is commonly made with the skin of a rein-deer fawn, which drops in spring, and is put on, instead of a shirt, with the hair inwards. The most usual upper-fur, or garment, which is worn also in summer, when the weather is cold, is what they call *Sarga*, or *Parka*, and consists of a rein-deer skin, sewed together, and worn with the hair inwards. It is almost like the *Mauliza*, except that behind the opening through which the head passes, hangs a hood, which occasionally is thrown over the head. They generally border the hood, and seams of the garment, with dog's-skin; and is often worn, in summer, without the under fur. In the representation given, is an Eastjaik in his under-garment, and one in his upper-garment. In winter, they wear a fur over both; and also a cap, made of long-haired rein-deer skin, called *Gus*. In summer-time, those who wish to appear genteeler than ordinary, make themselves a *Mauliza* of several pieces of cloth of various colours, without lining, and bordered with a white dog's-skin, or the tails of ice-foxes. Some, in the upper district of the Ob, wear, in rainy weather, fish-skin clothes, which, when they are hungry, and in want of other food, they put into a kettle, boil, and eat. The common breeches of the men are made of dyed rein-deer skins, or quab-skins; are cut to fit close on them, but do not reach the knees. On their legs they wear



EASTMAKES.

Thomas Allen

How strange

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wear short stockings, made of the fawn of the reindeer; and, over these, boots, made of the foot-skin of the same animal: the parts between the hoof, are fastened together for the sole of their boots, being more solid, and as preventing their slipping on the snow. Such boots are exported by Russian merchants; and worn, when travelling in winter, both by Russians, and the people of Siberia.

The women wear, next their skin, a kind of bedgown, made of fur, and open all the way before; they are not very wide, yet sufficiently so as to lap over, and tie together. This is the only garment they wear: they take care to keep it close before, but are not permitted to wear a girdle. They never wear any breeches; and, as they go bare-footed in summer, was it not for this fur-garment, they would be quite naked. In winter, at home, they wear stockings, like the men; their hair is braided into two tresses behind, which hang down the back, and are tied together by a string. Added to this, the more wealthy fasten on the hair behind, two long strips of good cloth, which reach to the joint of the knee, and are decorated with brass and copper-plates, representing little horses, rein-deer, fish, and other figures. Those that have not much hair, wind a piece of cloth about their heads, which crosses behind, and hangs down the back in two long strips. Both men and women wear long pendants, in their ears, of beads of several colours, strung on a wire, or string;

string; and several men wear rings in their ears. As soon as any one enters their tent, whether strangers or relations, the women cover their whole heads with a linen veil, and will not be unveiled, even before their own mother. These veils are called, *Wokſche*, are worked on the borders, and ornamented with fringes. This is not an affected, but a real, blushing modesty in the Eastjaik girls and women; and, is carried so far, that whenever a stranger arrives, they endeavour to leave the tent, or hide themselves in a corner.

Among the women it is reckoned an ornament to mark the back of the hands, and the fore-part of the arm, with various, bluish figures and points: for this purpose, they draw the figure they mean to mark, upon their skins, with soot, and prick it with needles till it bleeds; in so doing, the prick given with the needle, leaves a blue speck, and the figure being so pricked all over, remains on the skin in use. Men only prick on their hands that sign, by which they are registered in the tax-book; and which is considered, by other Siberians, unskilled in writing, as their signature, in law. The men will also, occasionally, prick all sorts of figures upon their shoulders, and other parts of their body, where they have scarified themselves, in case of sickness. As the Eastjaik women ornament themselves, in this respect, as do the Tunguse, and some nations in North America, so have they, like the women in Kamschatka, another ridiculous and peculiar custom; that

that of wearing continually in the *vagina*, a tent twisted together, and made of soft willow-bast scraped, which they occasionally remove, and often change; and, lest this tent should fall from its situation, by the motion of the body, they have fancied a girdle (*Worop*), formed like those chastity-girdles, invented by the jealousy of our southern Europeans; from which passes a band between the legs, covering the whole with a piece of birch-bark, sewed to it;—a contrivance that, at certain times, is not without its use.

As other nomades are called shepherds, the Eastjaiks may be called, a nation of fishermen; for fishing, during the whole summer, and in part of the winter, is their chief occupation. Hunting, and bird-catching, is an occasional employ; but deserves a description, equally with their fisheries. Such being the life of an Eastjaik, it is naturally unsettled; of course, in summer-time, they move their habitations to places most adapted for fishing; but, like the Baskirians, and some Siberian Tartars, have settled habitations in winter, to which they annually return.

A summer-tent (*Chat*) is made without much alteration; the birch-bark which covers it, is carried with them in boats made of hollow trees, enlarged with boards fastened on them, as are also the poles with which they form their tents; these poles are set close together, in form of pyramids, and covered with the bark.

In these boats they go, with their wives and children, and all that belongs to them—I speak this only of such Eastjaiks as live beyond Beresowa; for higher up the country, most of them live in huts built of timber, have benches to sleep on, and, in many points, conform to the Russian mode of living.

They chuse, for their winter abodes, high and dry spots, or the banks of neighbouring rivers. Here they build, with young timber, regular, square huts, similar to a Russian house, but low; sometimes half underground, and without a roof; instead of which, they cover the top with turf and leaves, leaving only a square air-hole, which they cover, in winter, with a transparent piece of ice. On each side of this house, is an open passage fenced in, in which are two closets, where they keep their superfluous furs, and necessaries. Such huts are inhabited by more than one family; and the place, within the walls, is divided into as many apartments as there are families. Though narrow and confined, the mother must put up with one room, for the children and the whole family; who do their work before a small fire. It may easily be conceived, that there cannot be the best order in such a room, where all things must lie littered about: three, four, nay, six families, shall live together in such a hut. Beyond Beresowa, there are but few huts, or jourts, that have not thirty families in each. Those mothers who have infants, have a cradle, made of birch-

birch-bark, before their house, and fill it with any fine and bruised rotten wood they can find, which serves the infant as a bed; and all the wet such infant makes, is absorbed in this wood-dust. The cradle is covered with a piece of fur, fastened to it by strings. The beds of such as are grown up, are made on the bare ground, with rein-deer furs and hay; except in such rooms where there are benches to lie on, underneath which their favourite dogs lie, especially those who have whelps. Common sledge-dogs lie without the house; yet, when the master wants to go out, they are admitted within, to be fed. In the centre of the jout is a common fire, pretty large, where every one dresses his victuals when he pleases, for they have no regular meals; and here they also roast the remains of what fish they leave, for the dogs. From this continual roasting, the cielings of their winter-dwellings are so much covered with soot, that it hangs down like icicles. One may easily judge of the offensive smell, and damp, at entering such a hut; from whence no dirt or filth, made by men or dogs, is removed; and where even children perform their occasional and necessary wants, without going out.

Beside these winter-huts, they build often, at a little distance from them, in the woods, places to store their provisions in (*Labassy*), where they leave all their furs, skins, and other articles, for which they have no immediate use, without the least care; and, what the place

will not hold, is left without on their sledges, and is perfectly safe, no theft being ever committed.

The filthiness of this nation cannot be painted sufficiently disgusting. Washing of hands is unknown among them, except when the women open a fish, or take it out of the boiler; at which time they wash off the filth, and dry their hands in their furs. Men and animals eat out of the same vessel, which is never cleaned. As their felt-like hair swarms with vermin, the most filthy of all their actions is that of the women, at their leisure, picking such vermin from their husband's heads, and killing them, with all possible calmness, between their teeth. The rich Eastjaiks, however, from imitation, are become so cleanly, as to make a kind of soap, because what the Russians use is too scarce and dear, and not strong enough to clean their hands, which are, comparatively speaking, an inch thick with grease. This soap is made by putting a good quantity of sharp ashes into a kettle of water, and pouring, by degrees, fish-fat into the lye, which they boil together, till it settles, and becomes soap. They then take it out in pieces, tie it up in rags, and, when they wash their hands, squeeze it like a sponge: but the common Eastjaiks, have no such cleanly thing. One reason of their filthiness is, that the women have too much domestic business on their hands, and are considered by their husbands rather as slaves than consorts. The wife erects the tent, pulls it down, dresses the
victuals,

viſtuals, dries and mends her husband's clothes, and ſerves him in every thing; and when the husband returns from hunting, or fiſhing, ſhe muſt clean, and dreſs the fiſh. The men take nothing on themſelves, but the buſineſs of fiſhing and hunting.

The manner in which theſe women dreſs their ſkins, is a good one, as they keep out the wet; I will, therefore, deſcribe it. Two tools are uſed for this purpoſe; firſt, a ſmall iron, to the middle of which is fixed a wooden handle, and whoſe two ends are crooked and ſharp; with theſe they ſcrape the raw ſkins, firſt on the fleſh-ſide. This done, they chew fiſh-roë, or dried fiſh-bellies, in their mouths, and ſpread it over the ſkin, which is rolled up, and laid aſide, to become moiſt. They then take another ſcraping iron, which looks like a narrow ſickle, with two wooden handles, one at each end; through theſe handles a rope is drawn, which they ſling round their foot, hold the iron between their legs, and ſcrape the fleſh-ſide of the ſkins clean. After this, they are dried in the tent, or hut, and worked ſoft with the hands. "It is the chewed fiſh-roë that renders them impenetrable, by water,"

As it is only the more wealthy Eaſtjaiks, beyond Be-reſowa, that keep rein-deer; and we ſee other domeſtic cattle only among thoſe who live more to the ſouth, towards Tobolſkoi, moſt of them muſt live by fiſhing. During the whole ſummer, both young and old, are ſo

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occupied;

occupied; and even children are kept to work, according to their strength, in this line. In this season, they have such an abundance of fish, that they eat nothing else; and they seldom think of boiling, or roasting them, but cut off the flesh, as it comes fresh out of the water, sauce it with its blood, which flows plentifully from about the tail, when pricked with a needle; take one long slice after another, into their mouths, cutting the bits very skilfully below their lips; of course, in summer, their mouths and clothes, stink worse than a fish-market. In winter, they are fond of raw frozen fish; and are imitated in this by the neighbouring Russians, who eat it so, as a preservative against the scurvy.

Far more fish is caught, in summer-time, than they are able to eat, or barter with the Russians. In the lower districts of the Ob, the smaller sorts, which they do not know how to dispose of, are thrown away, and lie about in heaps untouched, even by the dogs. They preserve their fish in three different ways: the whole sides of large whittings are taken from the bones, dried in the wind, and, to prevent putrefaction, are half-roasted, and then tied up in bundles, and called *Poseem*. The best of this kind of food is a fish of passage, caught in the Ob, which they call *Muksun*. After drying, it is put into a kettle, and stirred about on the fire till it becomes brown, then stowed away in vessels made of birch-bark, or the stomach of the rein-deer.

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The bones are dried and roasted, and given to the dogs. *Jutta* is a food made like *Poseem*, of smaller fishes; and put away in bags, made of the skin of a sturgeon. *Porfa* is a little species of scale fish, split, and dried in the wind, and then, with the bones, pounded, as fine as flour. *Poseem* is their most usual food; but, to their guests, they present *Mukfun* and *Poseem* together; so that one is used as bread to the other. If these provisions fail, they put up with the *Jutta*. *Porfa* is given dried, and seldom boiled. Fresh fish is only boiled for guests, and what they leave, the family eats; and, on such occasions, they plunge their filthy hands into the kettle, up to their elbows. In winter, they make a soup, or fish-broth, and put flour in it; this they learnt from the Russians, and throw it down their throats with large spoons. The entrails of fishes, the Eastjaiks make no use of, but boil out the fat, and dispose of it to the Russians, who eat it as butter, on their fast-days. The back-sinews are seldom dressed; these are usually eaten raw, without a knife. Eating with a knife is held ominous of unsuccessful fishing. The same thing they fear, if a fish's belly is slit strait down; the women, therefore, cut them across.

They make glue of the sturgeon's air-bladder, by cleaning it from the fat, drying it in the air, boiling it in water till it swims at top, and then skimming it, and cooling it in cold water.

Hunting is one of the men's winter-occupations; and, in winter, they fish underneath the ice. In autumn, when the first snow falls, they hunt elks and rein-deer; and he that kills, makes a feast for his friends. The kidneys, lights, and other soft parts, are eaten like the melt, raw; part of the flesh is boiled, and the rest smoked.

In winter, the Eastjaiks travel in their snow-shoes, far into the deserts and forests, and do not return for some months, drawing their food with them, on small sledges. Hunting weapons are all sorts of arrows; some with a fork-like point, others with bone-points, and others clubbed at the end, to kill small animals with. If they kill any large animals in any great number, they flea them, bury the flesh in the deep snow, in a spot they can find again, and fetch it at some other time, with rein-deer, or dogs. They will eat the flesh of bears, foxes, squirrels, and dead carcases, without disgust. When an Eastjaik is exposed to severe cold, pain and hunger, he has recourse to tobacco, which does him a great deal of service; so that they are fond of smoking, and taking snuff: and as their tobacco is not very strong, they quicken it with the most alkaline ashes of birch, and asp sparges. After filling their nostrils with snuff, they stop them with scraped willow-bast, so that the pungent, sharp juice, shall raise a kind of inflammation in the face, which keeps off the frost. I must not omit, here, their superstition

perstition in hunting. When an Eastjaik goes a hunting, he wishes to sneeze the day before, and considers this as a happy presage; but should he find himself disposed to sneeze the morning he sets out, he will make all possible grimaces to prevent it, and should he sneeze after all, nothing can exceed his vexation, conceiving that, every time he sneezes, will deprive him of part of his sport for that day; nay, some, on such an occasion, will not go out at all,

In spring, the birds of passage claim their attention, and afford them delicious food. Their manner of catching them, shall be circumstantially related.

Notwithstanding their unnatural food, their drink, (except brandy, which they barter for with the Russians, and drink on the spot) is water only; I say, notwithstanding this, they are a healthy people, and, among youth, we seldom hear of disease. But if, from age and infirmities, they are unable to follow their occupations, they are commonly attacked with such stubborn, scorbutic and paralytic disorders, as never to rise again. They know nothing of inflammatory complaints, except the small-pox, which makes dreadful ravage among children, when it comes. Their manner of living must needs render this disorder fatal; and, if it enters a village, grown people seldom escape. Some, however, remain free all their lives. The venereal disease has also found its way among them;

them; but is not so infectious, as might be supposed.

Medicines they are unacquainted with. Their best cure in fits, swellings, and inflammations, is scarification, or burning, on the diseased part, a piece of birch-spurge; and being of opinion, that the remedy must be applied to the place where the evil is lodged, they first take a burning coal, and hold it about the diseased part, on different places of the skin, till they find a part where the patient does not feel the fire so sensibly; there they apply it, and keep it till the skin is burnt through, and bursts: the patient suffering this burning, with the patience of a stoic.

They cure obstructions, with large spoonfuls of fish-fat; and, in dangerous cases, take crow's eyes. Both these are used as an emetic and purge. The gall of a white sea-bear, and bear's heart, are also medicines of renown among them. Dried gall is chiefly used in sickness among children, or complaints of the belly, and the venereal disease.

The Eastjaiks, particularly beyond Beresowa, who adhere still to paganism, take as many wives as they can afford. It is legal among them to marry their brother's widow, their step-mother, or step-daughter, and other female relations. They are fond of marrying sisters of other families; and believe that, men's marrying

rying with a wife's sister, brings good luck, and, by doing this, they pay the father only half the price, or kalym, first paid; but they hold it sinful and disgraceful, to marry relations of the same name: yet they attend only to the male line. If a woman has married into another family, and has borne a daughter, the brother of the mother, or his children, may legally marry that daughter. In short, all marriages are legal, if only the father of the bride, and bridegroom, are of different families.

When an Eastjaik goes a courting, he chuses, from among his nearest relations and friends, some companions of his own age, and one to be the negotiator; goes with them to his sweetheart's dwelling, and enters the hut without ceremony. A father who has a marriageable daughter, seeing such a company arrive, readily guesses the reason; therefore, makes no question, but treats them with what his tent will afford. When the guests have filled their bellies, they retire to another tent, and from thence the bridegroom sends his suitor with the proposals, and enquires the kalym, or price to be paid, The negotiation being entered into, the poor suitor runs to and fro, from one tent to the other, to settle matters between the two, till the agreement is concluded on; then the bridegroom goes himself, and pays part of the kalym, the whole being seldom paid at once, it being proportioned to the fortune the father gives with his daughter. A rich, Eastjaik girl,

girl, is not married, without a gift of 100 rein-deer, and an assortment of all kinds of furs. The first instalment being paid, the bridegroom directs the father to have a bed prepared for him in his hut, and to have his daughter ready. If the father-in-law agrees to this, and accepts the first payment, the bridegroom comes, that night, and lays on the spot, or bed, appointed for him. Some time after the bride lies down near him, on a separate bench, and covered with a particular fur, till the fires are put out. Next morning, the girl's mother enquires of the bridegroom, whether he is satisfied with her daughter. If he replies in the affirmative, he must present the mother with a garment and a rein-deer; and the mother then cuts the rein-deer's skin on which the young couple lay, into pieces, and spreads it around, in triumph: but should the bridegroom be dissatisfied, the mother gives him a rein-deer. The bridegroom, after this, sleeps with his bride; but cannot take her home, till the whole of the kalym, or purchase-money, is paid. Sometimes, it shall happen, that, when the father is weak or ill, and cannot follow, the husband shall take away his wife, before the sum agreed on is paid; in such cases, the father takes the opportunity, at some future time, when his daughter comes to pay him a visit, to detain her, and force the husband to pay what is owing.

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No married woman can appear before her father-in-law whilst she lives; nor the bridegroom, before his mother in-law, until he has children. They must avoid them as much as possible; and, if they chance to meet them, must turn their backs, and cover their faces. Girls, in Eastjaik families, have no names; the husband, therefore, calls his consort, *wife* (Jemi); and the women call their husbands, *man* (Tahe).

Though the uncivilized Eastjaik does not consider his wife but as a necessary, domestic animal, and scarcely favours her with a good word for all her hard labour; yet he dare not strike her, even for the greatest crime, unless he has the consent of her father: for, in such a case, the provoked wife would run to her parents, and persuade her father to return the kalyin to his son-in-law, and she would marry some other man.

These people know little about jealousy; they are much addicted to bestiality; and their marriages are seldom very prolific. Few fathers have more than three or four children; probably, a father's neglect of his children, may shorten their days, and rob him of part of them. Though mothers shew a greater fondness, and will let their infants suck as long as they like, even to the fifth year. The women here are easily delivered; and the after-birth, and willow-bast on which they lie, is put into a box of birch-bark, and, with some meat or fish added to it, superstitiously

perfitiously hung upon a tree, in fome diftant wood. It is faid, that fhould a poor, Eaftjaik woman be delivered of a child on the road, when travelling, and where they cannot ftop long for want of victuals, the husband will give her a good dofe of fifh-glue boiled, and this will enable her to proceed.

They have particular burying-places of their own, called *Cbalas*. A corpf is not kept long above-ground; he that dies in the morning, is interred at noon. Their graves are made, generally, only two feet deep; becaufe, in moft places, the frozen ground is too hard to be dug into deeper. The deceased is drefsed in his beft clothes, according to the feafon of the year; is put on a bench, and all things near him which he ufed; for inftance, his knife, axe, tobacco-horn filled, &c. except his flint and fire-fteel, which are only given to the dead, carved in wood. The relations and neighbours of the deceased, afsemble in his jourt, and deplore him with great howling. The women fit together, with their faces veiled; and the men ftand, lamenting over the body. Inftead of a coffin, they bring a little boat, whole fore and hind part is cut off, put the deceased, with all his things, into it, and carry him to his grave. Men are borne by men; and women are carried by women only, to the place of interment, which is ufually on fome height. In the latter cafe, the corpf is followed by fome men to dig the grave, and is interred with fhrieks of woe. The corpf
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of a man is followed by three of the best and most favourite rein-deer he possessed, dressed, and harnessed, in sledges, and led on by men. As soon as the body is interred, and covered with earth, they put a cord round the hind-legs of the deer, which two men pull, whilst four others run them through the bodies, on all sides, with pointed poles. When rich men are buried, they kill many more rein-deer, putting slings about their necks and feet, and beating them about the back with poles, till they drop down dead. These animals, sacrificed to the deceased, remain on the grave; their housings are laid on a kind of scaffold, made over it with bushes, and the sledges are placed slanting up against it. Near the grave, they dress a funeral meal; and when those who attend are satisfied, carry the remainder home, and divide it among the neighbours, in remembrance of their deceased friend; and the relations will afterwards sometimes celebrate such meals of remembrance.

Before the Eastjaiks were subject to the Russian empire, they had little princes among them, whose dignity was hereditary. Some of their posterity are still in being, but not much respected, living in the manner of the common people, by their labour. If these princes left no male issue, the elders and most wealthy, chose a successor from among themselves. If any dispute happens among the people, these settle it by arbitration, or refer the matter to their princes; but if
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the cause is brought before any Russian court of judicature, it is adjusted by the evidence of the parties, and the following oath is usually administered. A wooden idol being brought, the defendant is reminded of the danger of taking a false oath, and constrained to cut off the idol's nose, with an axe, or knife, and injure it other ways; during this, he must repeat, after the interpreter, the following words: "If I do not speak the truth, in this cause, let my nose be cut off in the same manner; let me be hewn in pieces by an axe; let the beasts of the forest tear me; and every misfortune come upon me!" By the same oath the witnesses are sworn; and, out of superstitious fear, will rather confess they are in the wrong, than expose themselves to the punishment of their gods. If they are to swear allegiance to a new sovereign, they are assembled in little circles, an axe is placed in the middle, with which a bear, or bear-skin, has been cut in pieces; and each person is presented with a bit of bread, on the point of a knife; during this, he is to take the oath of allegiance, as follows:—"If I do not remain faithful to the Empress, to the end of my life; if I revolt, or do not pay my tribute; or if I leave my country, or do any other act of perfidy; let me torn by the bear, or choked with this bread I eat*; let the axe cut off my head; or let me be killed by this

* *This is the English Corfined oath. Hence the expression—*

"May this morsel be my last!"

"knife!"

"knife." This done, they kneel down about a bear's skin, and lay hold of it with their teeth, biting it; and many, to shew their zeal, will tear out the hairs with their teeth. Similar obligations, on oath, are customary, with a bear's skin, among most of the heathens, in Siberia.

The Eastjaik language is like that of Finland, and the Woguls. There are also divers dialects of this language. Among the Finnish dialects, there is none more like the Eastjaik, than the Mordvine. As an example, I will give a list of words, in the Eastjaik, Wogulian, and Mordvine languages; and the similarity will be readily seen.

ENGLISH.	EASTJAIK.	WOGUL.	MORDVINE.
<i>Two.</i>	<i>Kat.</i>	<i>Kijtti.</i>	<i>Kaftta.</i>
<i>Three.</i>	<i>Cholym.</i>	<i>Chorum.</i>	<i>Kolma.</i>
<i>Five.</i>	<i>Wet.</i>	<i>Att.</i>	<i>Wjette.</i>
<i>Hundred.</i>	<i>Sfat.</i>	<i>Schott.</i>	<i>Ssjada.</i>
<i>God.</i>	<i>Torom.</i>	<i>Torom.</i>	<i>Tora.</i>
<i>Devil.</i>	<i>Kul.</i>	<i>Kul.</i>	<i>Kul.</i>
<i>Wind.</i>	<i>Wat.</i>	<i>Wot.</i>	<i>Warma.</i>
<i>Sun.</i>	<i>Chat'l.</i>	<i>Chodel.</i>	<i>Ko.</i>
<i>Mountain.</i>	<i>Muu.</i>	<i>Mag.</i>	<i>Moda.</i>
<i>Man.</i>	<i>Cho.</i>	<i>Ker.</i>	<i>Kort.</i>
<i>Town.</i>	<i>Wafch.</i>	<i>Wofch.</i>	<i>Ofch.</i>
<i>Fish.</i>	<i>Chull.</i>	<i>Chul.</i>	<i>Kall.</i>
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The blindest and coarsest idolatry is still the reigning religion of the Eastjaiks; even of many that are baptized. Those who, among their magicians, profess paganism, have their idols at home; which are clumsily carved puppets, with a human face, clothed with rags, and put in the best corner of the tent. Before each idol, they place a little wooden box, in which the worshiper presents his god with little presents, and keeps always for him a horn-full of snuff, and scraped willow-bast; but if this little, wooden god should find himself disposed to take a pinch of snuff, he may stuff his nostrils with the bast, in the Eastjaik mode. They industriously smear the idol's mouth with fish-fat, and do him every honour, in their way. Some Eastjaiks have deified pieces of logwood, little boxes, and other things, they have bought from the Russians. Such things they decorate in the best manner they can, with rings and ribbands, and worship them, as others do their wooden puppets. It is truly laughable, to see the effect of a Russian traveller's taking out at night, when they are all asleep, the tobacco from the horn, and leaving the horn in its place; the simple Eastjaik, in such a case, supposes that the idol has taken all the snuff, is surprised at it, and thinks that he must certainly have been hunting. It can scarcely be credited, that such a people could be so blind and ridiculous, as to knock down the idol from its place, and break it in pieces, by various methods, when they are in trouble, and the god will not succour them; though they held the idol
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in the greatest veneration before. This is often in use among the Eastjaiks; but scarce ever seen in any other pagan nation in Siberia.

They also deify, in a certain manner, their deceased relations; making wooden images, to represent some dead person they respected; and set, at the remembrance-meals, their portion before them. Women that loved their husbands, will take these puppets to-bed at night, dress them, and never omit placing some victuals before them, when they eat themselves.

The Eastjaiks worship, also, certain trees and mountains, that have excited devout ideas; or have been considered as such by their magicians. They never pass such trees, or mountains, without shooting an arrow at them; which is a kind of worship they pay to these objects. But the greatest adoration, and most common, great sacrifices, are only made to certain eminent people, consecrated by their magicians. To these they fly for refuge, in extraordinary cases of misfortune, or danger; wherein the forcerers play the principal part, in order to bring the poor people, by their impositions, under a blind obedience.

The idols, at present worshiped by all the Eastjaiks of the river Ob, and the neighbouring Samojedes, are in the environs of the tents of Wafarskaja,

a great way beyond Obdorskaja. They stand in a woody vale; where they are carefully watched, and every passage to them concealed from the Russians. Before these idols, of which there are two, they assemble, in great numbers, to perform their sacrifices. One is dressed in a male dress, the other in a female; and both are splendidly decked out in the Eastjaik way, and no cloth, or furs, spared, to make them complete. Their garments are richly ornamented with brass and iron plates, in form of animals; and, on their heads, are silver garlands. Each stands on a selected tree, in his own jurt, or hut; the trunks of the trees are covered with cloth, and other stuff; and, at the top, decorated with a white, iron plate, with a bell hanging on it, that is shaken, and rung by the wind. Quivers and bows are also hung on the tree of the male pagod; and on all the adjacent trees, a number of skins of rein-deer victims, and other sorts of furs. Round about the idols is a great deal of Eastjaik, household utensils; as kettles, spoons, cups, tobacco-horns, &c. The men pay their devotions only to the male idol; but the women sometimes assemble before the female idol, led on by a magician of their own sex, and bring her sacrifices and presents.

The Eastjaiks formerly had, in many places in the woods, trees, they worshipped, and presented with skins and sacrifices; but finding that Cossack travellers made no scruple to save these skins, suspended
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in the air, from putrefaction, by putting them to a better use; they contented themselves with cutting large branches of these trees, dressing them up, and erecting them in more secure places, and there bringing them presents.

All the districts whose environs are consecrated to an idol, are spared by the Eastjaiks; so as that they neither fell wood, or make hay, in such places; nor will they hurt a fish, or drink there, lest they should provoke the anger of the god. If they pass such a district by water, they take care not to come too near the shore, nor touch the land with their oars; and should the district be extensive, they take sufficient water with them, before they come to it; as they would rather die with thirst, than attempt to drink any water from such a consecrated river.

All those places where idols were formerly worshipped by their ancestors, are now well known to posterity; and if some new place is chosen, it is from the caprice of those magicians that are most respected. A district full of game, shall be consecrated, by artful magicians, to an idol; and a tree, on which an eagle hath built her nest for two years together, is declared sacred; and they dare not molest that eagle. There could be no greater offence, than for a passenger to kill such eagle; and the teachers and supporters of so absurd a superstition, are the roguish magicians,

or schamans. Any officers; sent by Imperial command, to make any the least reform, which does not please the Eastjaiks, puts the whole nation into such terror and consternation, and the magicians take the advantage of these times, to relate fictitious dreams to the people, or threaten them with the anger of the gods, or some heavier punishment; and they get from them as many presents, by way of sacrifice, as will maintain them a long time. These schamans are commonly so cunning, in the beginning, as to tread themselves a path to such a respectable situation, as they stand in with these people, by relations and interpretations of dreams; and afterwards improve themselves, in the arts of knavery and deception. Superstition has so strong an influence on the minds of some people, that they are often terrified at the greatest trifles; as I shall have occasion to shew.

The opportunities to practise magic knowledge here, are cases of misfortune, horrid dreams, unsuccessful hunting, or fishing, and other accidents. The Eastjaik forcerers make use of a drum, like most Siberian schamans; and, in their magic spells, make horrible contortions of their bodies and faces, before large fires; till the devils which they have brought forth, as they pretend, have given them a proper answer. All those that are present, make, during the contortions, an uninterrupted noise with kettles, cups, &c. as loud as they can, and cry out, till they fancy they see a blue smoke,

smoke, over the magician's head ; who, after the fit, feigns to be, for some time, weak, and out of his senses.

The other principal occupation of the forcerers is, ordering the general offerings, or sacrifices ; which they command the timid people to make, as they please, in all extraordinary cases. I do not speak of little offerings ; as the Eastjaiks, of themselves, often carry the idol small presents and ornaments, game, fresh fish, and prostrate themselves before it ; and, after performing supplications, boil the sacrifice, and smear the idol's mouth with the fat, or broth : but I speak of greater sacrifices, where many rein-deer are killed for the gods, and where the schaman is present. —The following then is the ceremony : Having bound the rein-deer's legs together, the schaman stands before the idol, and bawls out as loud as he can, the supplication of him who offers to the gods ; and so do the by-standers. Then some one, with a bent bow and arrow, stands before the rein-deer, and, when the magician, with a staff, gives the signal on the head of the victim, he shoots it with the arrow, and another kills it outright, with a pointed lance, or pole. They next take the animal by the tail, and drag it thrice round the pagod, cut it open, squeeze out the blood from the heart, and smear the idol's mouth therewith. The head and skin is suspended on an adjacent tree ; and the meat boiled, and eaten with shouts of joy. What-

ever the Eastjaiks think of, serves for a song, if only bawled in a singing tone; and such are the hymns of these sacrifices. At parting, every one cries out as loud as he can, waves his arms in the air, and thus gives his idol thanks, and a farewell. The meat not eaten is taken home, and divided among their wives, children, and neighbours; first greasing the mouths of their domestic idols with the fat.

When great and general sacrifices are to be performed, the rich Eastjaiks drive their best rein-deer, in whole herds, to be killed; and scarcely keep those who are most useful to them. In such cases, they know how to slaughter the poor victims, barbarously and expeditiously; for the sooner a rein-deer falls and dies, the more acceptable to the idol is the offering supposed to be. A rich man would blush, on such occasions, to offer less than eight or ten rein-deer. Besides this, they hang up the best furs they have to the idol, as a present, and leave them a prey to wind and weather. Offerings are also made in severe sicknesses, according to the number ordered by the magicians. The victims are placed before the door of the patient's hut, and giving into the hand of the rich man a rope, tied on the rein-deer's foot, the friends and relations, standing with the magician, on the outside of the hut, call upon the idol, till the patient draws the rope, by accident, or intentionally, which is looked upon as a signal to kill the victim, and he is slaughtered accordingly,

ingly. Of such sacrifices, the skin is destined for domestic use, the head and horns put upon a pole, the flesh eaten, and the forehead and afflicted parts of the sick man, greased with the fat,

When the Eastjaiks have shewn their prowess in killing a bear, the following ceremony attends it. The skin is hung upon a high tree, all sorts of reverence is paid it, and the best apologies made to the animal for its being killed. By doing this, they hope to avert, in a polite way, the injury which might otherwise be done them by the spirit of the animal. "Some such customs are prevalent in Lapland." All, or most of these superstitious customs, are the same among all old Siberian pagans.

Particular mention deserves to be made of the dances of the Eastjaiks, which are quite national, and truly remarkable. I saw them performed by Russians, who dwelt long among the Eastjaiks; and their ridiculous attitudes cannot better be compared, than to a burlesque pantomime. They divert themselves thus at their entertainments; and particularly when they have obtained a good deal of brandy, by barter, from the Russians. It is the men only who dance, the women are merely spectators; and it requires no small adroitness, strength, and agility; for they always dance till they sweat. In these dances, they represent the
pro-

proceedings of their ancestors, in chace of a variety of animals and birds, and even a fishing. Sometimes, they imitate the conduct and walk of the most important animals and birds; and satirize the gait of their neighbours, all in musical cadence; which the player varies, according to the various imitations. In a very droll and laughable manner, do they represent the chace of the sable, the manners of the crane and elk, and the flight and preying of the mouse-hawk, the manner of the Russian women washing themselves, and other pleasant subjects. The most difficult representation appeared to me to be, that of the crane; when the dancer squats down, hides himself in a fur, the collar of which he fastens round a long stick, which at top resembles the head of a crane; and thus squatting, and almost bent double, he dances, and imitates, with the stick, all the motions of a crane. At the representation of the elk, the music imitates the several actions of the animal, walking, trotting, and galloping; and the dancer makes all the grimaces of that animal, when he is throwing about his eyes, in search of the huntsman who is after him. No one could suppose so much skill, and so many well-fancied attitudes, among so rude a nation. Their most favourite dances are, satyric representations; and they are fond of ridiculing particular persons in songs, the extemporaneous effusions of their own brain, when either drunk, or jovial.

Besides

Besides these dances and songs, they divert themselves, occasionally, with stories, which turn sometimes on love-adventures, and sometimes on old, incredible, boasted feats of heroism. They tell one of a mighty and valiant Eastjaik, who, going a courting, travelled from Obdorskaja to a distance of 340 miles, beyond the Sofwa, in 24 hours, without any change of rein-deer; and, not being able to agree with the father of his girl, carried her off in a little time; and being, on this account, obliged to fight with her relations, killed, with his own hand, several thousands of them, and so on. This piece of chivalry is believed, by the Eastjaiks, as true: some part of it may be so; but it is converted into fable, by posterity,

The musical instruments of this people are, the *Dombra*, exactly like the Wogulian lute; and some few species of little harps, called *Dernoboi*, which consist of a long-sounding triangular box, covered on the top with a sounding-board, and strung with 30 strings; which the player touches boldly, pressing down the thin-sounding board with his thumb, to give the tones a wavering motion. To one end of this box, is fixed a swan's neck.

To strangers the Eastjaiks are very hospitable; and do not know how to pay sufficient honour and respect to their guests. If they have any rein-deer, they will
kill

kill one immediately, and set before their friend, the tongue, brains, and breast, boiled in their way, and considered, by them, as delicacies. After the meal, they will make their guest such a present as they can afford, without expecting any return.

END OF THE THIRD VOLUME.

A D D E N D A.

ANAS MERSA.

M*agnitudo* supra querquedulam. *Rostrum* magnum, latum, cyaneum, basi supra nares tumidissima, didyma, inæquali in adultis, extremitate supra striis divergentibus exarata. *Caput* usque ad initium colli album, sed area majuscula verticis et palpebræ nigræ. *Collum* medium atrum. *Corpus* antice fusco-luteum, nigro-undulatum; dorsum cinereo atque lutescente nebulosum, fuscoque pulveratum. *Corpus* subtus reliquum, uropygiumque fusca, gryseo conspurcata, certoque ad lucem situ cano-nitentia. *Alæ* parvulæ, compositæ uropygio breviores, fuscæ, speculo nullo. *Uropygium* productiusculum; *cauda* elongata, rigida, angusta, cuneiformis, ut in Pelecanis, composita rectricibus 18 nigris, angustissimis. *Pedes* pone æquilibrium fere ut in colymbis, fusci, antice cœrulescentes; palma elongata.

In

In *junioribus* et feminis, qualem *tabula* simul exprimit, rostrum basi minus tumidum, totum fuscum; caput fuscum, gula alba, expansa versus nucham albedine.

Non infrequens est in Lacubus majoribus inter Uralenses montes, Irtim et Ob fluvios, nec unquam in ficcum exitura, quippe incedere nescia. Natat expeditissime, *cauda* usque ad uropygium *aquæ immersa* pro gubernalo, contra congenerum morem. *Vox* fere ut anatis hyemalis. *Nidus* fluitans ex arundine.

GRUS LEUCOGERANUS.

Maxima in suo genere, ipsa Grue Antigone procerior; stans erecto corpore quatuor cum dimidio pedes æquat. *Rostrum* gruino majus, forma simile, rubrum, marginibus utriusque maxillæ versus apicem ferratis, ut in Antigone. *Facies* ultra oculos nuda, rugosa, rubra, setulis crebris, rufis adspersa. *Irides* pallido-albæ. *Corpus*, totum nivei candoris, cervix in bienibus longitudinaliter fulvescens. *Remiges* decem primariæ, cum rectricibus suis solæ in candidissima ave nigræ. Pennæ scapulares minus elongatæ quam in Grue vulgari. *Cauda* subæqualis, rectricibus 12 latiusculis composita, corpori concolor. *Pedes* proceri, rubri, gruini.

Anniculæ

Anniculæ toto corpore fulvescentes, subtus albidæ, rostro, facie, pedibusque, fusco-virescentibus.

Habitat in vastissimis paludibus, campisque lacuum maxima copia irrigatis circa Ischimum, Irtim et Obfluvios et in septentrionalibus. *Nidus* inter arundines inaccessas, supra cumulos cæspitosos majores, herbis congestis stratus. *Ova* duo anserinis paria, cinerascientia, lituris crebris fuscis. *Clamores* crebri, cygneis similes præsertim subvolantis. *Victitat* ranis, pisciculis, lacertis.

LEPUS ALPINUS.

Magnitudo muris porcelli, facies totaque structura Leporis pusilli. *Caput* oblongum, ore leporis. *Dentes* primores superi sulco profundo exarati, acie incisa, communi tridentata; denticuli palatini truncati. *Aures* magnæ, suborbiculatæ, intur bilamellatæ, margine anteriore infundibuliformi-tubuloso. *Corpus* ventricosum, artusque breves, ut in *L. pusillo*. *Palmae* pentadactylæ, pollice brevi, *plantæ* tetradactylæ; volæ omnium lana densissima atra vestitæ. *Cauda* nulla, sed tuberculum pinguedinosum mole nucis. *Color* lutescens, supra fusco mixtus. *Areola* parotica velleris utrinque quasi detrita, pilis brevibus vestita. *Pondus* circiter unciarum 15. *Mammæ* duo inguinales, quatuor

tuor thoracicæ. *Costæ* in sceleto 18 parium. Structura intestinorum mira ut in *L. pusillo*. Infestatur larvis vestri subcutaneis.

Vivit in Alpinis, rupestribus Sibiria, Augusto scenifecans, herbasque siccas inter rupes congestans. *Vox* fistulata simplex.

FERULA an *nodiflora*?

Radix profundissime in sabulo delitescens, caules solitarios, ad superficiem terræ ramentis muscosos protrudens. *Planta* dilute viridis, sæpe quadripedalis, erecta, rigida. *Caulis* crassus, teres, striatus, subflexuosus, geniculis ad folia tumidulis. *Folia* rigidiuscula, radicalia pedalia, petiolis vaginantia, multiplicato-ternata, teretia striata, extremis tantum foliolis planis, trifidis. Caulina folia alterna, bi-vel triternata, fetaceo-rigida, fessilia vaginis caulem ambientibus, striatis, margine membranaceis. *Umbella* terminalis magna, multiradiata, involucro communi nullo; circa quam e caule vel nudo, vel intra folia plerumque bina, plurave vaginantia enascuntur *umbellæ* pauciorum radiorum, senæ, vel pauciores, in macilentis plantis marcescentes aut imperfectæ, in vegetis fastigiatae, imo sæpæ supra umbellam majorem elevatae. *Umbellulæ* particulares involucris circiter decaphyllis, globosæ, flosculis fessilibus velut in capitulum. *Flores* exteriores plerique

plerique abortiunt, reliqui, præsertim in disco, excrescunt in fructum, diu flore coronatum. *Semina* bina, latissima, ovalia, contorta; margine membranaceo. *Gustus* plantæ Pastinacæ fere æmulus, nisi gravior, feminibus fatis acer.

Crescit inter colles arenosos, locis humidioribus, copiosissime supra fortalitium Jamysechewa, Junio florens. Caules ficci cum feminibus maturis Julio legebat studiosus *N. Sokolof* in arenis Jaikum inter et Wolgam sitis. *Icon* plantam sistit omnibus partibus ad dimidium imminutam; flosculi soli seminaque naturali magnitudine exhibita.

PTEROCOCCUS APHYLLUS.

Frutex tri-vel quadripedalis, e *radice* crassa, lignosa, diametri sesquipollicaris, profundissime in arenam demersa, superius capitato-tuberosa, proferens *truncos* plurimos, digiti crassitie, erectos, ramissimos, dichotomos. *Lignum* durissimum, fragile, vestigiis geniculorum interceptum, vestitum cortice æquali, gryseo, striato. *Folia* omnino nulla. Sed rami lignosi e geniculis, tuberibusque passim antiquiorum geniculorum cicatricosis omni vere pullulant juniis herbaceis, tenuissimis, macris, longissimis, dichotomis, geniculatis, quorum internodia longa, rectissima, linearia, superius limbo exili subbilabiato coronata, quo superiora, sus-

cipiuntur ab inferioribus, fere ut in Anabasi. Horum præcociores firmantur in ramos ligneos persistentes, herbacei hyeme pereunt. *Flores* copiosissimi e ramis ligneis junioribus, præsertim circa tubera verrucosa, et in viminibus herbaceis, ex ipsis geniculis, intra exilem stipulam membranaceam enascuntur glomerati, albi. *Calix* nullus. *Corolla* pentapetala, albida, persistens; petalo inferiore paulo majore, duobus oppositis oblongioribus, minoribus. *Stamina* decem, longitudine corollæ, erecta, excrecente fructu cum corolla marcescentia, nec decidua: *filamenta* setacea, basi crassiuscula, tomentosa; *antheræ* subglobosæ, didymæ. *Germen* conicum, tetraëdrum, raro triquetrum, angulis bifidis excrecentibus in alas fructus; *styli* tres reflexi, stigmatate capitati. *Fructus* nux oblonga, tetraëdra, carinis in tenuem cristam productis, cui adnata *ala* orbiculata, vel subovalis, membranacea, coloris cinnamomei, a disco versus marginem striata atque fissilis, undulata. Alæ quatuor circa nucem undique connivent eamque celant. *Nucleus* oblongus, tetraëdrus, inter angulos profunde exsculptus, corculo centrali, per apicem nucis excrecente.

Mira hæcce arbuscula, quam ad genera Botanicorum referre non potui, copiosissime provenit in universo deserto arenoso, quod campos vastos inter Wolgam et Jaikum sitos clivoso tractu usque ad Caspium lacum percurrit, et sub nomine *Rynpeski* accolis notum est. A Kalmuccis desertum illud frequentantibus, Kirgisisque

gisiisque in quorum regione pariter arenosis locis provenire dicitur, nomine *Torlok* nota est, truncique ad exsculpendas fistulas tatararias adhibentur. Radicis truncus recens dissectus in superficiem taleolorum exsudat copioso gummate, quod adhuc copiosius e ratura radice emulsione elicitur, Tragacanthæ instar tumescens, primum hyalino-pallescent, admixta calida aqua lutescent, subdulce, ægre exsiccandum, brevique fermentans. Virgultum supra arenam eminens gummate orbem.—Vimina primo vere velut e vaginulis propullulant. Floret sub initium Junii, fructus maturos spargit Julio.

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These botanical descriptions are given in Latin, for the benefit of naturalists; the plants and animals having been sufficiently described to the English reader, in the course of the Work.

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